Environmental Defenders Office

3 June 2022

Air Policy
NSW Environment Protection Authority (**EPA**)
Submitted by email: air.policy@environment.nsw.gov.au

Dear EPA,

Draft Protection of the Environment Operations (Clean Air) Regulation 2022

Environmental Defenders Office (**EDO**) welcomes the opportunity to provide feedback on the draft *Protection of the Environment Operations (Clean Air) Regulation 2022* (**Draft Regulation**).

EDO is keenly aware of the health and environmental impacts of air pollution, and has advised and represented many communities throughout NSW in relation to these impacts. We have written extensively on the need for effective regulation of air pollution across NSW.

The EPA, through the Draft Regulation, seeks to update the *Protection of the Environment Operations (Clean Air) Regulation 2021* (**Current Regulation**) to make it more current and relevant, following a review of the latest environment and health research, current technologies, environmental practice, regulations and emission standards in other Australian jurisdictions and evolving community and stakeholder concerns. The Draft Regulation proposes a number of significant changes to the Current Regulation, including:

- extending the summer period when less polluting petrol must be supplied in the NSW Greater Metropolitan Region;
- requiring older activities and plant to comply with more stringent air emission standards; and
- requiring stricter emission limits and controls for volatile organic liquids for storage tanks, loading plant and tank vehicles and across a broader part of the NSW Greater Metropolitan Region that is at high risk of ozone formation.

EDO strongly supports more stringent standards on air pollution. Our submission identifies a significant gap in the framework governing air pollution in NSW, including in the Draft Regulation, recommends addressing this serious oversight, and identifies opportunities for the EPA to comply with relevant statutory obligations recognised by the Court, the former Minister and the EPA Board itself. In short, **we strongly recommend that the Draft Regulation be amended to regulate emissions of carbon dioxide, methane, and other greenhouse gases from industrial plants**

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and activities. We also identify opportunities to strengthen emissions exceedance limits and standards for other air impurities in NSW to better align with best practice.

Improving regulation of greenhouse gas emissions

Neither the Current Regulation nor the Draft Regulation include limits or standards for greenhouse gases emitted by activities and plant, despite the stationary energy sector (primarily public electricity production) being the largest source of greenhouse gas emissions in NSW.

Greenhouse gases such as carbon dioxide and methane are air impurities for the purposes of the *Protection of the Environment Operations Act 1997* (NSW) (**POEO Act**), which provides that:

> ***air impurity*** includes smoke, dust (including fly ash), cinders, solid particles of any kind, gases, fumes, mists, odours and radioactive substances.

Air pollution is defined as "the emission into the air of any air impurity". That is, for the purposes of the POEO Act as it stands, carbon dioxide, methane and other greenhouse gases are air impurities, and when emitted to the air by coal fired power stations or any other point source, are air pollution. They should therefore be regulated as such by the EPA.

To that end, **we strongly recommend that the Draft Regulation be amended to regulate emissions of carbon dioxide, methane, and other greenhouse gases from industrial plants and activities**.

The scope of the Draft Regulation should be expanded to include the regulation of greenhouse gas emissions from scheduled premises, and in particular from stationary energy sources. The Draft Regulation already imposes standards of concentrations for other air impurities released from scheduled premises, including coal-fired power stations with capacity to generate more than 30 megawatts of electrical power, metropolitan electricity works (gas turbines), and metropolitan electricity works (internal combustion engines).

In August 2021, the Land and Environment Court of NSW found that the EPA has a duty under s 9(1)(a) of the *Protection of the Environment Administration Act 1991* (NSW) (**POEA Act**) to develop environmental quality objectives, guidelines and policies to ensure the protection of the environment in New South Wales from climate change.[1]

In September 2021, less than nine months ago, the now Treasurer, then Minister for the Environment, Matt Kean, said that that he and the EPA Board had decided that "we will not be appealing that decision and will in fact be doing everything necessary to give it full effect."[2] Minister Kean went on to state that "we want to use all our agencies, all the levers within government, to set the quality objectives, guidelines and policies to ensure we protect the environment from climate change, as we should be doing."

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[1] *Bushfire Survivors for Climate Action Incorporated v Environment Protection Authority* [2021] NSWLEC 92.
[2] ABC Radio National Breakfast, 10 September 2021, available at https://www.abc.net.au/radionational/programs/breakfast/matt-kean-inaction-climate-change-covid-nsw/13535922 .

Regulations under the POEO Act are an ideal vehicle the EPA can use to comply with its judicially recognised, and Minister and Board endorsed, statutory duty to develop environmental quality objectives, guidelines and policies to ensure the protection of the environment in NSW from climate change.[3]

Placing limits on the emission of greenhouse gases by stationary energy sources is not a novel regulatory mechanism. The United States Environmental Protection Agency (**US EPA**) in October 2015 made a rule establishing emissions concentration limits for carbon dioxide equivalent emissions for both new and modified power plants.[4]

Placing limits on the emission of carbon dioxide from coal-fired power stations is an essential and practicable step that can be taken to commence mitigating the devastating harm caused by the emission of carbon dioxide and other greenhouse gases.

The Regulatory Impact Statement (**RIS**) for the Draft Regulation underestimates the costs of air pollution by not considering greenhouse gases as air pollution. This means it does not consider the health impacts of climate change, which is caused in large part by the greenhouse gases emitted by the combustion of fossil fuels (such as coal and gas) for electricity and industrial purposes. This air pollution and the resultant climate change will have an increasing impact on public health in the future.

In *Sharma v Minister for the Environment*,[5] the Federal Court found that climate change will have devastating impacts on human health, and in particular, the health of today's children and future generations:

> *291. A comprehensive account of the risks to the lives, safety and health of the Children has already been given. Perhaps the most startling of the potential harms demonstrated by that evidence is that one million Australian Children are expected to suffer at least one heat-stress episode serious enough to require acute care in a hospital. Many thousands will suffer premature death from either heat-stress or from bushfire smoke*.[6]
>
> …
>
> *293. It is difficult to characterise in a single phrase the devastation that the plausible evidence presented in this proceeding forecasts for the Children. As Australian adults know their country, Australia will be lost and the World as we know it gone as well. The physical environment will be harsher, far more extreme and devastatingly brutal when angry. As for the human experience – quality of life, opportunities to partake in nature's treasures, the capacity to grow and prosper – all will be greatly diminished. Lives will be cut short. Trauma will be far more common and good health harder to hold and maintain. None of this will be*

[3] *Bushfire Survivors for Climate Action Incorporated v Environment Protection Authority* [2021] NSWLEC 92 at [16].
[4] See US EPA, 2021, *NSPS for GHG Emissions from New, Modified, and Reconstructed Electric Utility Generating Units*, available at https://www.epa.gov/stationary-sources-air-pollution/nsps-ghg-emissions-new-modified-and-reconstructed-electric-utility
[5] *Sharma by her litigation representative Sister Marie Brigid Arthur v Minister for the Environment* [2021] FCA 560
[6] *Sharma* at [291].

> *the fault of nature itself. It will largely be inflicted by the inaction of this generation of adults, in what might fairly be described as the greatest inter-generational injustice ever inflicted by one generation of humans upon the next.*[7]

This evidence was not contested by the federal Minister at first instance, and was accepted on appeal by the Full Court of the Federal Court of Australia.[8]

In the face of undisputed evidence on the quantifiable impacts on public health and the environment from greenhouse gas emissions, the EPA can no longer justify inaction on regulating greenhouse gas emissions. Further, this failure to act breaches EPA's duty under s 9(1) of the POEA Act.

Prescribed concentrations remain too high

The Draft Regulation does not prescribe stricter standards of concentration than the Current Regulation for the emission of the air impurities. These standards, particularly those prescribed for electricity generation, significantly exceed those set in comparable jurisdictions such as the European Union,[9] or those recommended by the OECD.[10]

We welcome that the Draft Regulation proposes to require activities and plant on scheduled premises that belong to Groups 3 and 4, to comply with higher emissions standards on currently scheduled pollutants (Group 5 levels in 2025 and Group 6 levels in 2030).

However, we consider that the timeframe within which these changes will be required are overly generous. These facilities have been permitted to pollute at many times the levels that could have been achieved with modern pollution control mechanisms for a number of years already. Under the Draft Regulation many will reach the end of their life-cycle without having been required to update their pollution controls.

Each year that these facilities are permitted to continue polluting at current levels is a significant cost to the community in terms of impacts on human health, and particularly to infants and children in crucial development years.[11] The RIS for the Draft Regulation acknowledges this:

> *The public health impacts and costs of air pollution and, conversely, the benefits of reducing people's exposure to air pollution are substantial. Air pollution leads to (NSW Government 2016):*

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[7] *Sharma* at [293].
[8] *Minister for the Environment v Sharma* [2022] FCAFC 35.
[9] See Commission Implementing Decision (EU) 2021/2326 of 30 November 2021 establishing best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for large combustion plants, available at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2021:469:FULL&from=EN.
[10] OECD (2020) *Best Available Techniques (BAT) to Prevent and Control Industrial Pollution*, available at https://www.oecd.org/chemicalsafety/risk-management/best-available-techniques.htm.
[11] Farrow, Anhäuser and Myllyvirta, August 2020, *Lethal Power: How burning coal is killing people in Australia*, available at https://www.greenpeace.org.au/research/lethal-power-how-coal-is-killing-people-in-australia/.

• 520 premature deaths and 6,300 cumulative years of life lost in Sydney per year (Morgan, Broome & Jalaludin 2013)
• 1,180 hospital admissions in Sydney per year (Broome et al. 2015)
• an estimated $6.4 billion (2015 $) in health costs per year in the NSW GMR (DEC 2005).

As above, the costs of the contribution to climate change of facilities emitting greenhouse gases have not been considered by the RIS for the Draft Regulation, and therefore the true costs of air pollution are higher.

We are also concerned that the future tightening of air pollution limits for Groups 3 and 4 is undermined by the proposal that "if Group 3 and 4 activities and plants are unable to meet these updated emission limits by the due dates, different limits can be agreed via variation of the conditions of the environment protection licence."[12] Clean air should not be subject to a negotiation exercise between regulator and regulated but should be guided by health evidence.

Requiring continuous improvement

We note our submission to the *NSW Legislative Council Portfolio Committee No. 7 – Planning and Environment Inquiry into the Protection of the Environment Operations Amendment (Clean Air) Bill 2021*,[13] in which we recommended that industrial emitters be required to use **best available techniques** (or **BAT**, a standard set for the regulation of air pollution from industrial installations by bodies such as the OECD[14] and EU[15]) to manage the emission of pollutants from industrial facilities to air, land, and water.

BAT means the most effective and advanced pollution control methods available for the polluting activity in question. Although the concept is technology-based, requiring the implementation of a particular technology or combination of technologies, directives and guidance documents setting out what constitutes BAT for a particular industrial activity and pollutant will also set out the range of pollution concentration levels that can be achieved with BAT.

For example, the European Commission considers that BAT for NO_x emissions from coal-fired power stations is to use one or a combination of the following to achieve an emissions level for a large, existing coal-fired power plant, of a yearly average of 65-150 mg/m^3 or a daily average of <85–165 mg/m^3:[16]

- Combustion optimisation;
- Primary techniques such as air staging, fuel staging, flue-gas recirculation, or low NO_x burners;
- Selective non-catalytic reduction;

[12] NSW EPA, April 2022, *Regulatory Impact Statement Proposed Clean Air Regulation 2022*, p 3.
[13] **Attached** and available at https://www.edo.org.au/publication/submission-to-the-inquiry-into-the-protection-of-the-environment-operations-amendment-clean-air-bill-2021/
[14] OECD, 2020, *Best Available Techniques (BAT) to Prevent and Control Industrial Pollution*, available at https://www.oecd.org/chemicalsafety/risk-management/best-available-techniques.htm .
[15] See Commission Implementing Decision (EU) 2021/2326 of 30 November 2021 establishing best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for large combustion plants, available at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2021:469:FULL&from=EN.
[16] Ibid.

- Selective catalytic reduction; or
- Combined techniques for NO_X and SO_X reduction.

We **recommend** further regulatory reforms requiring that industrial emitters use best available techniques to continually drive emissions reductions.

As the Black Summer bushfires showed, air quality and climate events are inextricably linked, and the regulatory responses must also be coordinated – focussing on both mitigation as well as management. We refer to EDO reports including recommendations to maximise co-benefits across pollution policy, climate change and the NSW planning system,[17] as well as recent submissions EDO has made on air quality in NSW.[18]

We would be happy to discuss these recommendations in more detail. For further information, please contact rachael.chick@edo.org.au or (02) 9262 6989.

Yours sincerely,
Environmental Defenders Office

Rachael Chick
Solicitor

Attachments
Attachment A: *Empowering the NSW EPA to Prevent Climate Pollution*, EDO, November 2020.
Attachment B: *Submission to the Inquiry into the Protection of the Environment Operations Amendment (Clean Air) Bill 2021*, EDO, June 2021.
Attachment C: *Submission on the Clean Air for NSW Consultation Paper*, EDO NSW, January 2017.

[17] See: *Climate-ready planning laws for NSW: Rocky Hill and beyond*, available at: https://www.edo.org.au/publication/climate-ready-planning-laws/; *Empowering the NSW EPA to Prevent Climate Pollution*, **attached** and available at: https://www.edo.org.au/2020/11/26/empowering-the-nsw-epa-to-prevent-climate-pollution/.
[18] See: *Submission to the Inquiry into the Protection of the Environment Operations Amendment (Clean Air) Bill 2021*, **attached** and available at https://www.edo.org.au/publication/submission-to-the-inquiry-into-the-protection-of-the-environment-operations-amendment-clean-air-bill-2021/;
Submission on the Clean Air for NSW Consultation Paper, **attached**.

Environmental Defenders Office

Empowering the EPA to prevent climate pollution

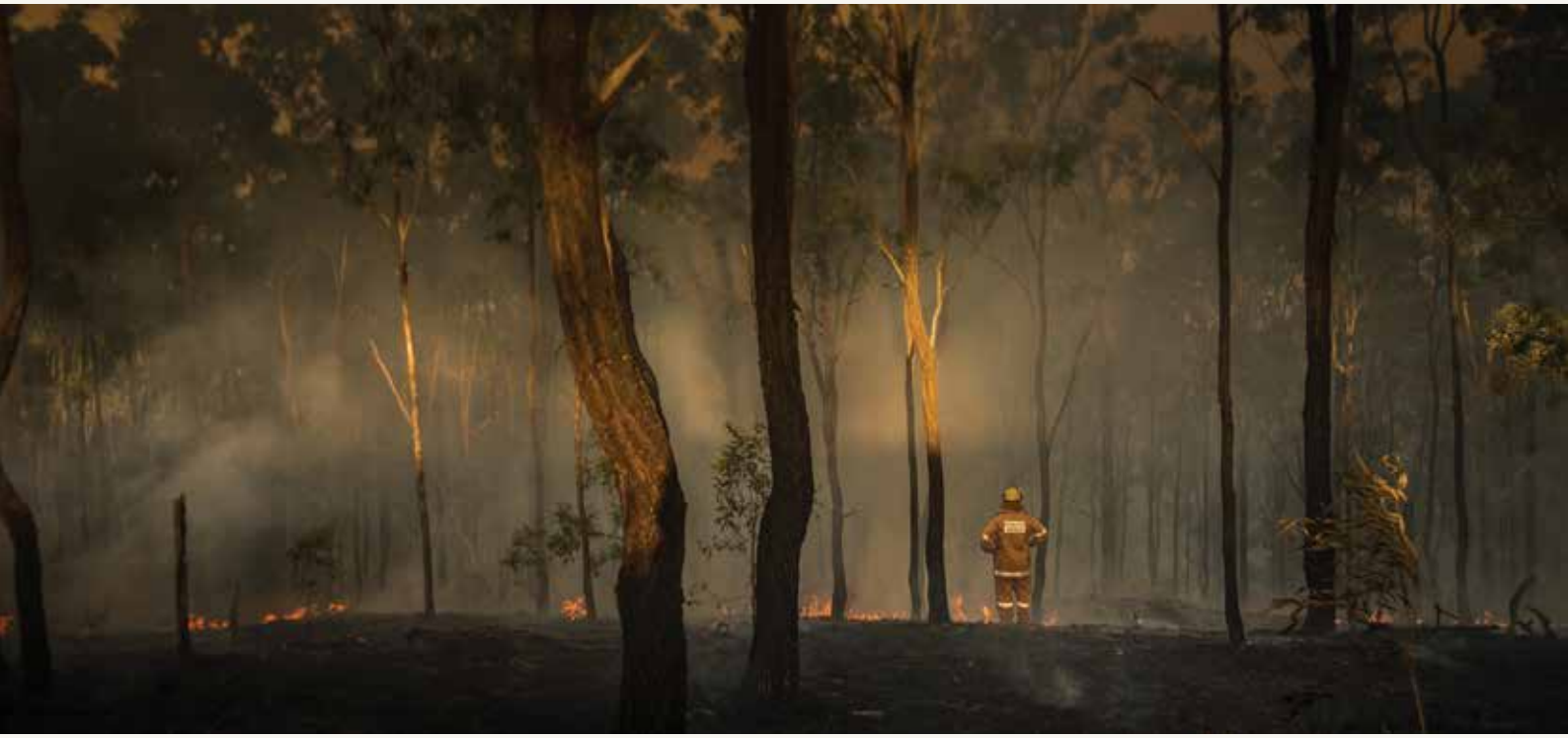
The role of the NSW Environment Protection Authority in reducing the risk of harm to human health and the environment from greenhouse gas emissions and the impacts of climate change

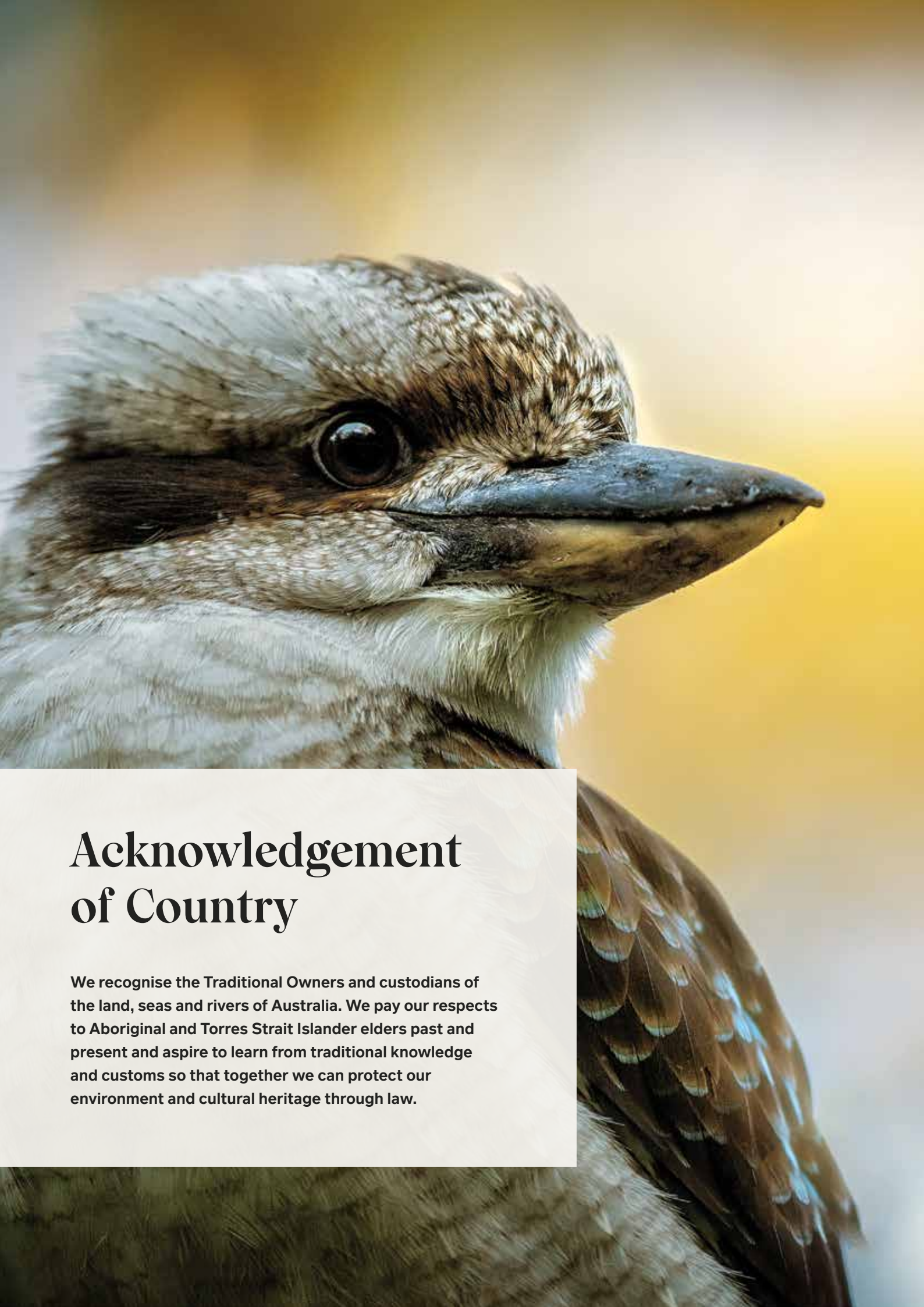
Environmental Defenders Office

EDO is the leading public interest environmental law organisation in Australia, with a formidable track record of successful court outcomes and in driving systemic change through our policy and law reform expertise. We provide expert, independent analysis of laws and regulations, legal education and support to communities across Australia and the Pacific, and we pursue litigation in the public interest.

Our vision is for a world where nature thrives.

November 2020





Acknowledgement of Country

We recognise the Traditional Owners and custodians of the land, seas and rivers of Australia. We pay our respects to Aboriginal and Torres Strait Islander elders past and present and aspire to learn from traditional knowledge and customs so that together we can protect our environment and cultural heritage through law.

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1. Executive Summary

Anthropogenic climate change is having significant impacts in Australia and across the globe. The annual global temperature in 2019 was 1.1 degrees Celsius (°C) warmer than pre-industrial conditions. Australia's average annual temperature has warmed by around 1.5°C since 1850, and the best available science tells us that average temperatures are projected to rise further.

Australia is already experiencing the impacts of climate change, which include increasing temperatures, warming and acidification of oceans, sea level rise, decreased rainfall in southern parts of the country and increased and more extreme rainfall in the north, longer dry spells, greater number of extreme heat days and the long-term increase in extreme fire weather.

The impacts of climate change are not just environmental. There are other significant implications, including social and economic impacts, across all sectors including health, tourism, agriculture, infrastructure and national security.

Urgent and rapid reductions in greenhouse gas (**GHG**) emissions from both direct and indirect sources are now required in order to meet the Paris Agreement goal of "holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C". The longer emissions reductions are delayed, the more pronounced and severe the effects of climate change will become.

Urgent and rapid reductions in greenhouse gas (GHG) emissions from both direct and indirect sources are now required in order to meet the Paris Agreement goal of "holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C".

The 'Black Summer' bushfires of 2019/2020 served as a stark warning to all Australians that the dire consequences of climate change have arrived. The bushfires should be a deafening 'wake-up call' to those with the power and responsibility to curb emissions – nothing less than urgent action and strong leadership will suffice.

The latest Climate of the Nation report, launched by NSW Environment Minister, the Hon. Matt Kean MP, found that 70% of Australians think that state governments should take a leading role in action on climate change. The NSW Environment Protection Authority (**EPA**) is the lead environmental regulator in NSW and is responsible for protecting the quality of our environment and human health. The key objectives of the EPA are to protect, restore and enhance the quality of the environment in NSW, having regard to the need to maintain ecologically sustainable development, and to reduce the risks to human health and prevent the degradation of the environment. The EPA is also required to develop environmental quality objectives, guidelines and policies to ensure environment protection.

In line with its key objectives and functions, the EPA can and should regulate GHG emissions using its existing powers to control pollution and waste, recognising the catastrophic consequences of uncontrolled emissions on all aspects of the environment and on human health. In doing so, the EPA would modernise the regulatory framework and set price signals consistent with the polluter pays principle, assisting in an orderly transition to a zero-carbon economy. This needs to happen now as part of NSW becoming a leader on climate action.

This report examines the various powers and functions of the EPA that can be used to reduce GHG emissions, including the preparation of Protection of the Environment Policies (**PEPs**) under Chapter 2 of the *Protection of the Environment Operations Act 1997* (**POEO Act**), issuing environment protection licences (**EPLs**) and load-based licensing fees under Chapter 3 of the POEO Act, and developing and implementing schemes involving economic measures as a means of achieving cost-effective environmental regulation or environment protection under Part 9.3 of the POEO Act.

With GHG emissions and a warming climate already impacting on the health, economy, environment and people of NSW, the EPA must play a leadership role and modernise its regulatory practice to ensure that GHG emissions are reduced, consistent with global efforts to limit warming to 1.5°C above pre-industrial levels.

The NSW Environment Protection Authority (EPA) is the lead environmental regulator in NSW and is responsible for protecting the quality of our environment and human health.

2. Key Recommendations

Recommendation 1:

The EPA adopts an **environmental protection goal** of reducing greenhouse gas (**GHG**) emissions consistent with limiting global average temperature rise to 1.5°C above pre-industrial levels.

In order to achieve this environmental protection goal, we recommend that:

Recommendation 2:

Consistent with the polluter pays principle, the EPA facilitates the reduction of GHG emissions by putting a **price on carbon**. This could be achieved by:

- Introducing schemes for economic measures (such as an emissions trading scheme) that set an appropriate price signal for reducing GHG emissions in NSW.
- The EPA immediately finalising the review of its load-based licensing (LBL) scheme and recommending that the LBL scheme be expanded to:
  - Include mining for coal and other related activities (which are currently not regulated by the LBL scheme);
  - Include carbon dioxide and methane (as well as other GHG pollutants not currently captured by the LBL scheme) as assessable pollutants (particularly for electricity generation, petroleum exploration, assessment and production, and mining for coal);
  - Increase fees to be more reflective of the costs of GHG pollution on society and drive cleaner production; and
  - Allow revenue from the LBL scheme to be used to fund GHG emissions reduction initiatives.

Recommendation 3:

The EPA adopts **other mechanisms** to reduce GHG emissions in recognition of their impacts as an environmental pollutant, including:

- The development of guidelines and policies for the reduction of GHG emissions, including standards or limits on GHG emissions;
- Placing conditions on environment protection licences (**EPLs**), including GHG limit conditions (consistent with relevant EPA guidelines or policies developed in relation to the reduction of GHG emissions);
- Implementing Pollution Reduction Programs via EPL licence conditions that require holders of EPLs to reduce GHG emissions; and/or
- The reduction of GHG emissions through emissions standards under the *Protection of the Environment Operations Act 1997* and *Protection of Environment Operations (Clean Air) Regulation 2010.*

Recommendation 4:

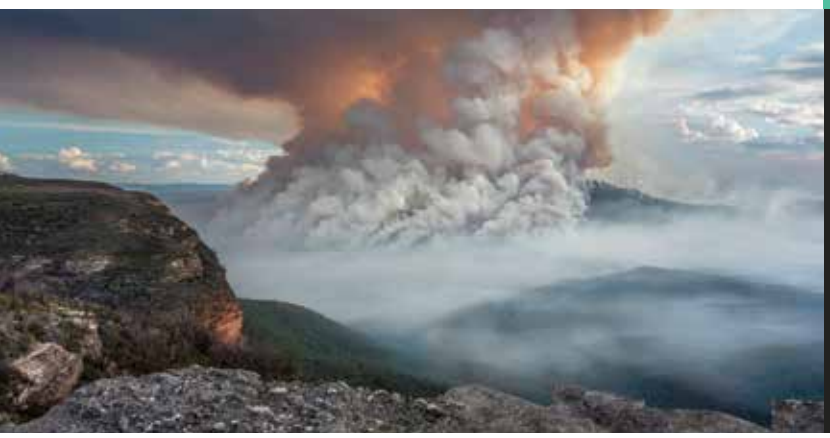
The EPA prepares and recommends the making of a **Protection of the Environment Policy** (**PEP**) in accordance with Chapter 2 of the *Protection of the Environment Operations Act 1997* to address the transition to a zero-emissions economy and the prevention of climate change impacts on human health and the environment of NSW.

Consistent with Recommendation 1, the PEP should contain an overarching environmental protection goal of reducing GHG emissions consistent with efforts to limit global average temperature rise to 1.5°C above pre-industrial levels.

The PEP should also:

- Identify mechanisms for the EPA to reduce GHG emissions via an appropriate regulatory scheme (consistent with Recommendation 2 and 3);
- Include guidelines for the reduction of GHG emissions across various sectors in NSW; and
- Include protocols to guide NSW government agencies to assess and respond to the impacts of climate change in decision-making.

3. Background



Anthropogenic climate change is already having impacts in Australia and across the globe.

3.1 Risk of Harm to the Environment Arising from Greenhouse Gases

The most recent NSW State of the Environment Report (2018) succinctly explains the impacts that GHG emissions are having on the climate:

"Emissions of carbon dioxide (CO_2) and other greenhouse gases from human activity (including power generation, industry, transport and agriculture) are leading to a build-up of these gases in the atmosphere, trapping heat and leading to global warming".[1]

This reflects the findings of the Intergovernmental Panel on Climate Change (IPCC), the United Nations body that assesses recent scientific research on climate change and its effects from around the world. The IPCC has published five comprehensive assessment reports to date, the most current being the Fifth Assessment Report in 2014. Key findings include that warming of the climate is unequivocal; since the 1950s, many of the observed changes are unprecedented over decades to millennia; and that human influence is clear and is the dominant cause of global warming since 1950.[2]

In light of the unequivocal scientific evidence of the impacts of anthropogenic climate change, the international community agreed in late 2015 to hold the increase in global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the increase to 1.5 °C.[3]

The Paris Agreement provides clear impetus for strong action and targets on climate change across government, business and community sectors. A 2018 Special Report of the IPCC makes it clear that the consequences of warming beyond 1.5°C are dire and must be avoided and indicates that current actions are not enough to limit warming by 1.5°C.[4]

Anthropogenic climate change is already having impacts in Australia and across the globe. For example:

- In 2018, the IPCC reported that human activities are estimated to have already caused approximately 1°C of global warming above pre-industrial levels.[5] More recent analysis by the World Meteorological Organisation has found that the annual global temperature in 2019 was 1.1°C warmer than the average for 1850-1900 (used to represent pre-industrial conditions).[6]
- Average annual temperature in Australia is around 1.5 °C warmer than in 1850 (around 1.4 times the global average change of around 1.1 °C).[7]
- 2019 was Australia's warmest and driest year on record, and the seven years from 2013 to 2019 all rank in the nine warmest years.[8] Globally, 2019 was the second-warmest year on record, and was the warmest year without the influence of El Niño.[9]

- An unusual increase in both the number and intensity of positive Indian Ocean Dipole (**IOD**) events after about 1960 is implicated in Australia's worst droughts, as well as wildfire risk and habitat destruction in Indonesia and southeast Australia. The frequency and effects of positive IOD events are expected to increase with climate warming.[10]
- A retrospective analysis of the 2019/2020 Australian bushfire season identified that climatic factors including low rainfall, high temperatures, and a very strong positive IOD were pre-conditions to the bushfire season.[11]
- Average sea surface temperature in the Australian region has warmed by more than 1°C since 1900, with eight of the ten warmest years on record occurring since 2010.[12] This warming of sea temperature due to climate change has been directly attributed to reef bleaching events on the Great Barrier Reef.[13]

The climate of NSW is also changing due to anthropogenic climate change. Impacts that have already been seen include:

- The number of hot days across NSW has been increasing since the mid-20th century, with a decrease in the number of cold nights (temperatures dropping to less than 2°C overnight);
- Over the period 1911–2013, heatwaves in parts of NSW have become longer, hotter and more frequent. Since the late 1950s, these changes have accelerated in most regions; and
- A 3.2mm rise in sea level per year for the NSW coast since 1993.[14]

On current projections, the likely and/or potential consequences of climate change for NSW include the following:

- Maximum temperatures increasing in the near future by 0.4 °C to 1.0°C;
- Minimum temperatures increasing in the near future by 0.0 °C to 0.5°C;
- The number of hot days increasing in the near and far future;
- Rainfall decreasing in spring and winter in the near and far future;
- Average fire weather increasing in summer and spring in the near and far future;
- Number of days with severe fire danger increasing in summer and spring in the near and far future;
- Increase in the intensity of extreme rainfall events and associated flooding, although the magnitude of the increases cannot be confidently projected;
- Soil organic carbon (a widely used indicator of soil health) is expected to decline throughout the state, resulting in losses up to 10t/ha. In the southern alpine region, losses greater than 20t/ha are likely;
- Changes for the Alpine region and surrounding areas, including changes in precipitation, temperature and wind;
- The effects of existing threats on biodiversity are expected to be exacerbated and additional pressures will be introduced; and
- Sea level rise is expected to increase resulting in greater exposure of coastal lakes and estuaries to inundation and erosion.[15]

The impacts of climate change are not just environmental. There are other significant implications, including substantial social and economic impacts, across all sectors including health, tourism, agriculture, infrastructure and national security. For example:

- In 2011, the Australia Government produced a report titled "*Climate Change Risks to Coastal Buildings and Infrastructure*" which found that more than $226 billion in commercial, industrial, road and rail, and residential assets are potentially exposed to inundation and erosion hazards at a sea level rise of 1.1 metres (high end scenario for 2100).[16]
- In 2017, the Australian Senate Foreign Affairs, Defence and Trade References committee recognised climate change as a current and existential national security risk.[17]

The impacts of climate change are not just environmental. There are other significant implications, including substantial social and economic impacts, across all sectors including health, tourism, agriculture, infrastructure and national security.

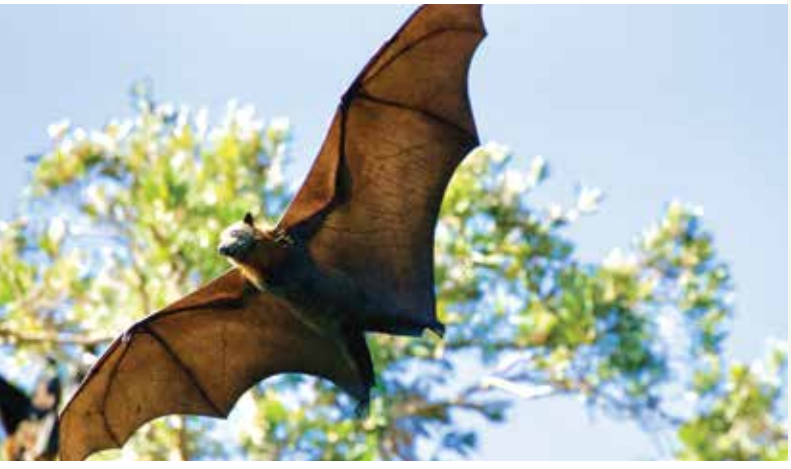
- The NSW Government has acknowledged a number of adverse human health impacts identified by the IPCC including heat related mortality and extreme weather mortality; increases in water and food borne disease; changes to distribution and occurrence of vector borne diseases; increased air pollution; and adverse impacts on mental health.[18]
- The World Health Organisation (**WHO**) advises that climate change affects the social and environmental determinants of health – clean air, safe drinking water, sufficient food and secure shelter, and that between 2030 and 2050, climate change is expected to cause approximately 250 000 additional deaths per year, from malnutrition, malaria, diarrhoea and heat stress.[19]
- In Australia, public health impacts of climate change are predicted to include increased mortality from heat-related illnesses; increased ranges of diseases such as dengue fever and Ross River virus through increased temperatures and changing rainfall patterns; and health impacts from climate change driven disasters such as bushfires and cyclones.[20] This will lead to increased costs for the health sector. For example, recent analysis has found that the wildfire-smoke-related health burden and costs from the Black Summer 2019/2020 fire season was AU$1.95 billion.[21]
- The Australian Medical Association has issued a Position Statement on Climate Change and Human Health, that includes acknowledgement that the consequences of climate change have serious direct and indirect, observed and projected health impacts both globally and in Australia; reducing greenhouse gas emissions within a global carbon budget is necessary to prevent further climate harm as a result of human activity; the health impacts of climate change and the health co-benefits of climate mitigation policies both bear economic costs and savings; and economic evaluations of the costs and benefits of climate policies must therefore incorporate the predicted public health impact accrued from such policies and the public health costs of unmitigated climate change.[22]
- The increase in droughts, heatwaves, and extreme weather events associated with climate change are likely to have an extreme impact on Australia's agricultural sector.[23]
- The increasing severity of extreme weather events is predicted to significantly reduce property values and increase insurance costs, rendering some properties uninsurable.[24]
- The Reserve Bank of Australia has announced that banks, business and investors must think about the economic impacts of climate change.[25]
- The Australian Prudential Regulation Authority (**APRA**) has sought to ensure regulated entities are actively seeking to understand and manage the financial risks of a changing climate just as they would other economic and operational risks.[26] Financial risks identified by APRA include costs associated with the physical impacts of climate change including direct damage to assets and property from changing climate conditions and extreme weather events such as bushfires, sea level rise and more intense storms; transitional risks caused by disruption from adjustment to a low-carbon economy which can impact on pricing and demand, and lead to stranded assets; and liability risks including stakeholder litigation and regulatory enforcement from not considering or responding to the impacts of climate change.[27]
- Analysis from The Australia Institute shows that, with 2°C global warming, Australia would experience a long-run reduction of $33.7 billion of gross domestic product (**GDP**) per year, increasing to $164 billion of GDP per year in a scenario of 4°C global warming.[28]

The recorded impacts of climate change are already having a significant impact on the people, communities and landscapes of NSW. **Case studies** 1 - 4 show the experiences that people in NSW are already facing as the climate changes, including firefighters, Indigenous peoples, farmers and doctors, and the communities they represent. The effects of climate change on the people and the environment of NSW are expected to become more pronounced and increase in severity as warming continues over the next century.

The latest Climate of the Nation report, released in October 2020, shows that:

- 80% of Australians think we are already experiencing the impact of climate change;
- 82% of Australians are concerned that climate change will result in more bushfires;
- 71% of Australians think Australia should be a world leader in finding solutions to climate change; and
- 70% of Australian's think that state governments should take a leading role in action on climate change.[29]

Not only is the science telling us that we need to act urgently to reduce GHG emissions, but public sentiment indicates that meaningful action on climate change is expected, to both address the impacts of climate change that we are already experiencing and to avoid the more harmful impacts that are predicted.



Case Study 1: Greg Mullins AO AFSM, former Commissioner (Chief Fire Officer and Chief Executive Officer) of Fire and Rescue NSW

Greg Mullins is a former Commissioner of Fire and Rescue NSW and former President of the peak council for fire and emergency services in Australia and New Zealand. His professional firefighting career with the NSW Fire Brigades (later Fire and Rescue NSW) spanned 39 years. His voluntary firefighting began in October 1971 when he was 12 years old and continues today. He researched bushfire fighting authorities in the USA, Spain, France and Canada during a Churchill Fellowship in 1995. Greg deployed throughout NSW during the 2019-2020 bushfires as a crew leader and strike team leader, and is now a Deputy Group Captain in the NSW RFS. Here Greg reflects on his experience in fighting fires and the impacts that extreme weather events are having on bushfire events and firefighting techniques in Australia.

In Australia and worldwide, I have observed that the frequency and severity of extreme weather events are increasing exponentially.

After the 2009 Black Saturday fires, the Australasian Fire and Emergency Service Authorities Council coordinated nationally to change the bushfire danger rating system. Since 2010, there has been a new rating of "catastrophic", which means if people stay in a danger area, they are likely to die. "Catastrophic fire danger" refers to weather conditions that are "off the scale" of 1-100 on the McArthur Forest Fire Danger Index. To my knowledge, before the 21st century such conditions were considered to be

so rare that no change to the rating system was warranted. It is so regular now that evacuation and emergency warnings are commonplace, something which fire services used to avoid, believing on the basis of historical fires that people would be safe if they stayed home and sheltered.

Bushfire seasons have lengthened due to hotter, drier and windier weather being experienced in months that were not problematic for fires prior to the 21st century. An increase in fire weather and lengthening danger season have reduced times available for hazard reduction burning from six months to, in some locations, about six weeks annually. The New South Wales Government has over recent decades reduced the number of rangers and firefighting staff employed by the National Parks and Wildlife Service. Forestry has been corporatised, impacting on the number of foresters and staff available to manage forest estates. The Bushfire Section of Fire & Rescue NSW, which previously had dedicated hazard reduction crews, had those crew removed in the early 1990s. Therefore, the workload for hazard reduction is falling increasingly to volunteer firefighters from the NSW Rural Fire Service who often are only available on weekends.

Under the extreme conditions we are now seeing, hazard reduction is only effective if it has occurred in the last couple of years, maybe in the last three years at most. Extreme weather conditions have become the main driver of extreme fires, rather than fuel. This is challenging because traditional firefighting doctrine was premised on an ability to modify fire behaviour and intensity through modification of fuel loads. This is less successful under a changing climate.

In summer 2019/2020, there were hundreds of fires across New South Wales. It got to a stage where there were thousands of kilometres of fire perimeter, making containment virtually impossible. Remote fire fronts burning intensely, even at night due to the dryness and high temperatures, cannot be controlled.

Because the fire fronts were so large last summer, they sometimes generated their own weather and wind. In the worst cases, this can lead to pyroconvective fire activity, and pyrocumulus clouds – literally, fire storms. Fire-generated storms can cause powerful, cyclonic wind gusts, updraughts, violent downdraughts, and sudden changes in wind direction. Such fires are immensely destructive, often destroy buildings, and during the last fire season resulted in deaths, such as a firefighter who was crushed beneath his fire truck which was lifted up and dumped on its roof by a powerful wind squall. To my knowledge, nobody worldwide knows how to put out or deal safely with fires that become pyroconvective or cause fire tornadoes, another formerly rare phenomenon.

The 2019/2020 bushfire season destroyed more than ten times more homes than the previous worst fire season in NSW history, which occurred in 2013. Up to 21% of eastern broadleaf forest was burned, against an annual average of about 2-3%. The magnitude of the fires was directly driven by unprecedented extreme weather conditions over an extended period. According to the “Bureau of Meteorology Special Climate Statement 72 – dangerous bushfire weather in spring 2019”, records from 1950 show that a normal spring in New South Wales used to have an average of two days of very high fire danger or above. In 2002, there were 11 days of very high fire danger, the highest on record up until then. In 2019, there were 21, demonstrating an accelerating trend in serious fire weather.

Unregulated release of GHG emissions is the greatest threat to the environment and people of NSW, as anthropogenic climate change has the potential to adversely and irreversibly alter all aspects of the natural environment.

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Currently, the key initiative for reducing greenhouse gas emissions in NSW is the *NSW Climate Change Policy Framework* - a high-level State Government policy released in November 2016.[30] The Framework has no statutory basis – it is not linked to or underpinned by any Act of Parliament.

The Framework identifies two aspirational long-term objectives on mitigation and adaptation:

- to 'Achieve net-zero emissions by 2050', and
- that 'NSW is more resilient to a changing climate'.

The Framework sets out broad, high-level action that the NSW Government will undertake in the areas of policy, operations and advocacy, namely:

- The NSW Government will set policy to achieve emissions savings, consistent with Commonwealth action, and to enable effective adaptation to climate change;
- The NSW Government is a major purchaser in the NSW economy through delivering government services and managing government assets. The government will lead by example and drive market change; and
- The NSW Government will advocate for climate policy action at national and international levels.

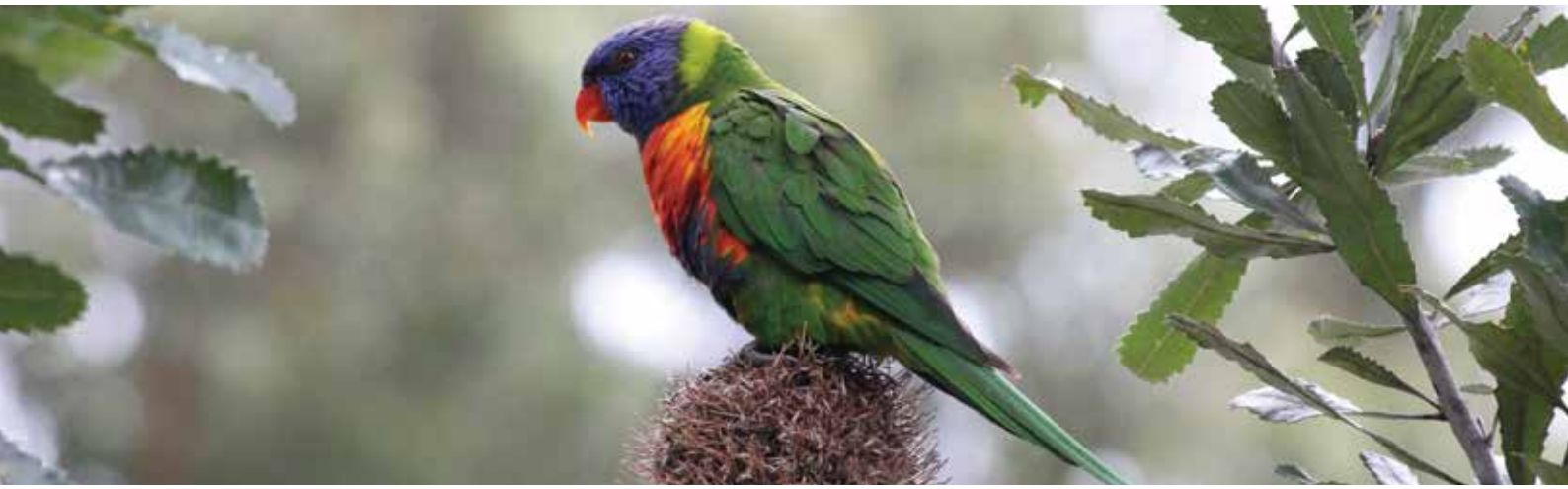
The *Net Zero Plan Stage 1 2020-2030*,[31] released in March 2020, sets out how the NSW Government will deliver its objectives over the next decade, namely through the following four priorities:

- Drive uptake of proven emissions reduction technologies;
- Empower consumers and businesses to make sustainable choices;
- Invest in the next wave of emissions reduction innovation; and
- Ensure the NSW Government leads by example.

Overall, despite the aspirations and high-level references in the Framework and Stage 1 Plan, its directions are tentative, non-enforceable, and there is little, if any, direct link to key environmental protection legislation.

The NSW Government has also recently released its NSW Electricity Infrastructure Roadmap, which sets out the Government's vision for a transition to cheap, reliable and clean energy that will deliver on the ambition of net zero emissions by 2050.[32]

To ensure an orderly transition to a zero-carbon economy, complementary action must also be taken by the EPA to modernise its regulatory framework and reduce carbon pollution in line with the polluter pays principle. With that in mind, this report examines the role of the EPA and opportunities for the EPA to regulate GHG emissions as an environmental pollutant, consistent with its objectives to protect, restore and enhance the quality of the environment and to reduce the risks to human health and prevent the degradation of the environment.



3.2 Role and Functions of the EPA

The EPA is established under the *Protection of the Environment Administration Act 1991* (**POEA Act**).

The objectives of the EPA are:

a) to protect, restore and enhance the quality of the environment in New South Wales, having regard to the need to maintain ecologically sustainable development; and

b) to reduce the risks to human health and prevent the degradation of the environment, by means such as the following:

- promoting pollution prevention;
- adopting the principle of reducing to harmless levels the discharge into the air, water or land of substances likely to cause harm to the environment;
- minimising the creation of waste by the use of appropriate technology;
- regulating the transportation, collection, treatment, storage and disposal of waste;
- encouraging the reduction of the use of materials, encouraging the re-use and recycling of materials and encouraging material recovery;
- adopting minimum environmental standards prescribed by complementary Commonwealth and State legislation and advising the Government to prescribe more stringent standards where appropriate;
- setting mandatory targets for environmental improvement;
- promoting community involvement in decisions about environmental matters;
- ensuring the community has access to relevant information about hazardous substances arising from, or stored, used or sold by, any industry or public authority; and
- conducting public education and awareness programs about environmental matters.[33]

Under section 9 of the POEA Act, the EPA is required to:

a) develop environmental quality objectives, guidelines and policies to ensure environment protection; and

b) monitor the state of the environment for the purpose of assessing trends and the achievement of environmental quality objectives, guidelines, policies and standards.

The EPA is also required to develop a comprehensive scheme of environmental audit with respect to industry, commerce and public authorities.[34]

Consistent with the EPA's objectives, its *Strategic Plan 2017 -2021* has an overarching vision *"Healthy Environment, Healthy Community, Healthy Business"*, and its commitments include *"improved human health and environmental protection"*.[35]

The EPA also has a range of functions and powers under the *Protection of the Environment Operations Act 1997* (**POEO Act**). For example, the EPA:

- is responsible for the preparation of Protection of the Environment Policies (**PEPs**) under Chapter 2 of the POEO Act;
- issues EPLs under Chapter 3 of the POEO Act; and
- can develop and implement schemes involving economic measures as a means of achieving cost-effective environmental regulation or environment protection under Part 9.3 of the POEO Act, including tradeable emissions schemes, green offsets schemes and environmental monitoring programs.

The EPA has a range of programs and initiatives in place. For example, the EPA's website (under the heading 'Your Environment') contains links to the EPA's work in the following areas: air, chemicals, contaminated land, dangerous goods, household building and renovation, litter and illegal dumping, native forestry, noise, pesticides, radiation, recycling and reuse, waste and water. There is no specific area of work focused on GHG emissions or climate change. Further, as highlighted below, the regulation of GHG emissions is not captured within any of these existing themes, such as air pollution or waste.

Part 4 of this report examines opportunities for the EPA to implement mechanisms to regulate GHG emissions as an environment pollutant, including:

- Schemes for economic measures (such as an emissions trading scheme) that set an appropriate price signal for reducing GHG emissions in NSW;
- Conditions on EPLs, including GHG limit conditions;
- Guidelines and policies for the reduction of GHG emissions, including standards or limits on GHG emissions;
- Statutory standards and limits on GHG emissions;
- Pollution Reduction Programs that require holders of EPLs to reduce GHG emissions; and
- A draft PEP to address climate change impacts on the environment of NSW.

Case study 2: Bhiamie Williamson, Euahlayi Man from north-western NSW

Bhiamie Williams is a Euahlayi Man from north-western NSW. Bhaimie is a PhD candidate and research associate at the Centre for Aboriginal Economic Policy Research at the Australian National University. Here Bhiamie reflects on his experience of a changing climate on Country, Aboriginal culture and heritage.

The main spiritual hub of our Country is the Narran River and the Narran Lakes wetland, which is a Ramsar-listed wetland and recognised internationally for its environmental values and bird nesting. As an adult, I have gone back to my Country at least once a year, and now that I have had my first child, I travel back to my Country three or four times a year.

Climate change is directly impacting Aboriginal peoples' connections with Country and doing cultural harm. In my Country, I have observed significantly less rainfall and longer, drier seasons. In the past, the hot season has gone from a period of about four months to now about six months. The peak of the hot season is much more intense, with stretches of days over 40 degrees much more likely than before. Extreme heat events make daily living very hard for elderly people and people with ill health and chronic health issues. The wet season, which used to last for about two months, is now down to between three and five weeks.

A lot of the native plants and native birds have ceased to exist at the Narran Lakes, or my community sees them only rarely. The bird species, such as bush turkeys, that used to proliferate there need water of sufficient quality to live. I have only seen two bush turkeys there in my life. Magpie geese, which used to nest in the Narran Lakes, are not there anymore. There are fewer black cockatoos, owls, and pelicans. These birds are important culturally and ancestrally, but are also an important food source for my community. When you take out the water, the birds, and the food sources, you take out the kind of ceremonial attachment that different people have to those animals as well. This gives me a deep cultural sadness.

One of the totemic animals for our community is the emu or *dhinawaan*. Emus have a nesting season, which is in the cold season. Longer and hotter hot seasons affect the sustainability of the species. There are now fewer emus on my Country and I fear that there is a real possibility that emus may disappear from my Country in the decades ahead.

Less water on my Country impacts the viability of living on Country. Now, when there is water, it is not of great quality. Australia is a dry country but the droughts we are experiencing are unprecedented and getting worse. The Namoi and Barwon Rivers, on my Country, went dry last year, which has not to my knowledge occurred before, even in my community's cultural memory going back millennia.

Two years ago my wife and I had our first child. When he was old enough, we took him home to Country. When we got to Walgett, I drove down to the Barwon River where I used to camp, fish and swim when I was a kid. It's a place where my people have always camped. For the first time in my life the river was completely dry. And I just walked down to the river and stood on the riverbed with my son and just cried. It was one of the saddest moments of my life.

4. Options for Reducing Greenhouse Gas Emissions in Order to Protect the Environment and Human Health

4.1 Introduction - Regulation of GHG Emissions as Pollutants or Waste

4.1.1 Pollution

While the regulation of air pollution is well established, historically, regulated air pollutants have not included GHG emissions. This is changing however, particularly following the decision in the US case of *Massachusetts v Environmental Protection Agency*, which found that carbon dioxide and other GHG emissions are air pollutants under the *Clean Air Act 1977* (US) and can therefore be regulated by the US Environmental Protection Agency.[36]

Currently, there is no regulation of GHG emissions as air pollutants in NSW even though GHG emissions would fall within the definition of air pollution ("*air pollution* means the emission into the air of any air impurity") and air impurity ("*air impurity* includes smoke, dust (including fly ash), cinders, solid particles of any kind, gases, fumes, mists, odours and radioactive substances").[37]

According to the EPA's own website,[38] the EPA's framework for action on improving air quality includes:

- **NSW clean air legislation**, namely:
  - The POEO Act, which sets the statutory framework for managing air quality in NSW, including the licensing scheme for major industrial premises (load-based licensing scheme) and establishing a range of air pollution offences and penalties. Approved methods for both the modelling and assessment, and sampling and analysis of air pollutants in NSW sit under this framework.
  - *The Protection of the Environment Operations (Clean Air) Regulation 2010* (**POEO (Clean Air) Regulation**), which prescribes controls and standards for offences under the POEO Act, including in relation to wood heaters, fires, motor vehicles and fuels and industry.
  - The *National Environment Protection (Ambient Air Quality) Measure* (**Air NEPM)** (to which NSW is a signatory) which sets nationally agreed standards for six key air pollutants, namely carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, ozone and particulates. In accordance with the Air NEPM, the EPA is required to monitor and report on air quality across the state.
- **Managing particles and improving air quality in NSW** - The EPA's 2013 *Managing particles and improving air quality in NSW* policy document sets out various non-legislative initiatives that the EPA is undertaking to reduce particle emissions in urban and regional NSW.[39]
- **Diesel and marine emissions management strategy** - The EPA's 2015 *Diesel and marine emissions management strategy* sets out various non-legislative initiatives to reduce air pollution from priority non-road diesel sources in NSW (such as cruise ships and cargo ship operations, locomotives, non-road diesel equipment such as cranes, gantries, bulldozers, loaders and trucks).
- **Clean air for NSW consultation** - The EPA led community and stakeholder consultation on the NSW Government's 2016 *Clean Air for NSW Consultation Paper*, which outlined the NSW Government's proposed approach and actions for improving average air quality results across NSW.[40] However, it is unclear whether the NSW Government will finalise the Clean Air for NSW strategy.[41]

None of these mechanisms specifically regulate GHG emissions.

4.1.2 Waste

The EPA is also charged with the regulation of waste in NSW. The EPA's objectives include reducing the risks to human health and preventing the degradation of the environment, by (relevantly) minimising the creation of waste by the use of appropriate technology and regulating the transportation, collection, treatment, storage and disposal of waste.

The POEO Act establishes management and licensing requirements for waste and defines

offences and penalties relating to waste. Additionally, waste management requirements are set out in the *Protection of the Environment (Waste) Regulation 2014* (**Waste Regulation).**

The Waste Regulation provides for contributions to be paid by occupiers of waste facilities such as landfills, requires record keeping and tracking for the transport of certain types of waste, and sets out requirements for the disposal of certain hazardous waste such as asbestos.

Additionally, the EPA administers the *Waste Avoidance and Resource Recovery Act 2001*, which promotes waste avoidance and resource recovery consistent with its objectives, which include encouraging the most efficient use of resources and reducing environmental harm in accordance with the principles of ecologically sustainable development.

In addition to being pollutants, GHG emissions could also be considered 'waste' for the purposes of the POEO Act ("*waste* includes (a) any substance (whether solid, liquid or gaseous) that is discharged, emitted or deposited in the environment in such volume, constituency or manner as to cause an alteration in the environment…").

Despite this, the EPA does not regulate GHG emissions as waste.

Reducing GHG emissions through pollution and waste laws acknowledges their impacts on the climate, environment and human health. Further, emissions reduction initiatives that involve putting a price on carbon, in recognition of the cost of GHG emissions to the environment and human health, can encourage behavioural change, consistent with the polluter pays principle.

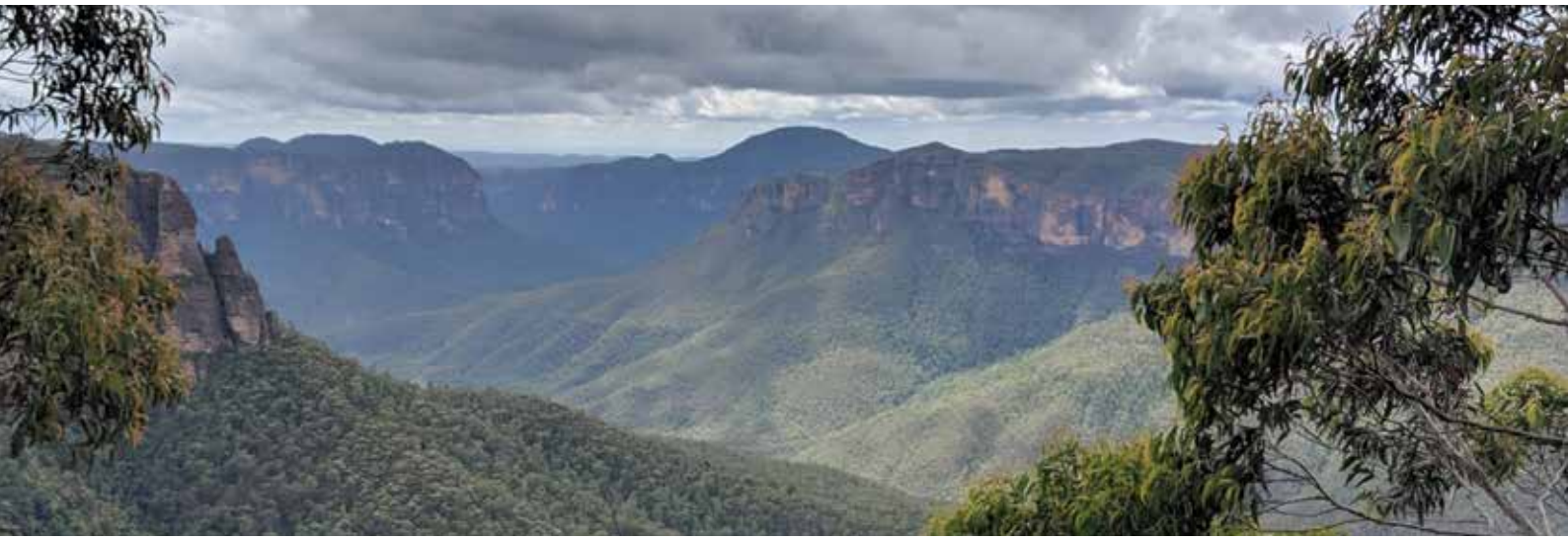
Reducing GHG emissions through pollution and waste laws acknowledges their impacts on the climate, environment and human health.

Polluter pays principle

The polluter pays principle provides that *"those who generate pollution and waste should bear the cost of containment, avoidance or abatement"* – see section 6(2) of the POEO Act.

The polluter pays principle is one of the key tenets of ecologically sustainable development and is derived from the economic theory of externalities, requiring a polluter to take responsibility for the external costs (such as impacts on the environment or community) arising from its pollution. The polluter pays principle plays a role both in the prevention of pollution (for example, by compelling polluters to reduce pollution in order to avoid upfront costs of having to pay in order to pollute) and remediation (for example, by requiring polluters to pay for any damage caused by unauthorised pollution).[42]

The polluter pays principle is incorporated into the EPA's regulatory framework in a number of ways, for example through load-based licensing, where licence fees are based on the loads of pollutants released into the environment,[43] and compliance and enforcement, where compliance action is based on environmental harm (i.e. the greater the harm the greater the penalty).[44]



4.1.3 Overview of possible mechanisms for GHG emissions reduction

The prevention of GHG pollution can be achieved via a number of mechanisms, and may be different, depending on the source of the GHG emissions and preferred regulatory approach. For example, regulation of GHG emissions from a coal-fired power station may be achieved through a licensing mechanism. Emissions reduction initiatives, in particular those that put a price on carbon, can encourage pollution reduction through the use of load-based licence fees, or in the case of a market-based trading scheme, require polluters to purchase credits to offset pollution and provide incentives for positive behaviour such as emissions reduction (by generating credits that can be sold within the market). A 2020 study on the effect of carbon prices on CO_2 emissions growth rates found that carbon pricing helps to reduce emissions below levels that would otherwise be observed.[45]

Options for reducing GHG emissions through existing NSW protection of the environment laws are discussed below and summarised in **Table 1**, including:

- Schemes for economic measures;
- Environment protection licences;
- Air pollution standards and limits; and
- Protection of the Environment Policies.

Some of the options would require or be better implemented via legislative or regulatory change (and would therefore need the support of the government of the day to implement) whereas other options could be initiated by the EPA in its own right under existing powers.

In establishing mechanisms for reducing GHG emissions, the EPA could:

- Establish a climate advisory committee made up of climate scientists to advise the EPA on climate science, including in relation to the setting of emissions limits and the reduction of GHG emissions consistent with carbon budgets;[46]
- Undertake public consultation on any proposal to reduce GHG emissions; and
- Ensure there are processes in place for regularly reviewing mechanisms, to evaluate their effectiveness in reducing GHG emissions.

Table 1 – Overview of possible mechanisms for reducing GHG emissions under NSW pollution and waste laws

Key mechanism	Options	Key provisions and features	Enforcement mechanism
Schemes for economic measures	Tradeable emission scheme	• Part 9.3 of the POEO Act provides that the EPA may develop and implement schemes involving economic measures as a means of achieving cost-effective environmental regulation or environment protection. • Part 9.3A of the POEO Act outlines how an ETS could be developed under the POEO Act.	• Tradeable emission scheme can be implemented via conditions on EPLs (section 295D, POEO Act). • Failure to comply with a condition of an EPL is an offence under section 64 of the POEO Act.
	Green offset scheme	• Part 9.3 of the POEO Act provides that the EPA may develop and implement schemes involving economic measures as a means of achieving cost-effective environmental regulation or environment protection. • Part 9.3B of the POEO Act outlines how a green offsets schemes could be developed under the POEO Act.	• Green offset schemes can be implemented via conditions on EPLs (section 295N, POEO Act). • Failure to comply with a condition of an EPL is an offence under section 64 of the POEO Act.
Environment Protection Licences (EPLs)	Licence conditions	• The EPA has broad powers to attach conditions to EPLs (section 63, POEO Act). • Part 3.5 of the POEO Act contains examples of conditions that can be attached to a licence (e.g. conditions relating to monitoring and reporting, mandatory environmental audits, financial assurances or remediation work), but does not prevent other conditions being attached to a licence. • GHG emissions could be regulated by the EPA via conditions on EPLs.	• Failure to comply with a condition of an EPL is an offence under section 64 of the POEO Act.
	Load-based licensing (**LBL**)	• An existing NSW load-based licensing scheme operates under the POEO Act and the *Protection of the Environment Operations (General) Regulation 2009.* • It regulates pollutants by imposing a licence fee system for certain prescribed activities. • It also establishes load-based limits for certain pollutants for prescribed activities. • The existing NSW LBL scheme could be expanded to regulate GHG emissions as a pollutant under the scheme.	• Load-based limits are implemented via conditions on EPLs. • Failure to comply with a condition of an EPL is an offence under section 64 of the POEO Act.
	Pollution Reduction Programs (**PRPs**)	• PRPs aim to reduce pollution from regulated activities at licensed premises through a program of actions that can include carrying out works or installing plant and equipment. • Section 68 of the POEO Act allows the EPA to impose conditions requiring EPL holders to develop and comply with a PRP.	• PRPs are implemented via conditions on EPLs. • Failure to comply with a condition of an EPL is an offence under section 64 of the POEO Act.

Key mechanism	Options	Key provisions and features	Enforcement mechanism
Pollution and waste standards and limits	Non-statutory limits (guidelines etc.)	• Guidelines and policies for the regulation pollution or waste can provide standards or limits (e.g. EPA *Noise Policy for Industry* (2017)). • The EPA could develop a guideline or policy that outlines how GHG emissions can be assessed and regulated by certain industries, and set standards for decision-makers to consider in assessing and determining EPL applications and issuing licence conditions under the POEO Act.	• Standards set out in guidelines may be implemented via conditions on EPLs. • Failure to comply with a condition of an EPL is an offence under section 64 of the POEO Act.
	Statutory limits	• Part 5.4 of the POEO Act and the POEO (Clean Air) Regulation currently regulate air pollution (e.g. emissions from wood heaters, fires, motor vehicles and fuels and industry) by prescribing standards or limits in the regulation, or directly prohibiting certain activities. • The scope of the POEO Act and POEO (Clean Air) Regulation could be expanded to include the regulation of GHG emissions.	• The POEO Act contains various offence provisions for exceeding standards of concentration or rate (e.g. s128 - Standards of air impurities not to be exceeded).
Protection of the Environment Policy (PEP)	Protection of the Environment Policy	• PEPs can establish policies for protecting the environment in NSW – to further the objectives of the EPA and manage the cumulative impact on that environment of existing and future human activities (Chapter 2, POEO Act). • The EPA can initiate the preparation of a draft PEP in its own right or may be directed to prepare a draft PEP by the Minister. • A PEP must specify one or more of the following - (a) an environment protection goal, (b) an environment protection standard, (c) an environment protection guideline, or (d) an environment protection protocol. • The EPA could draft a PEP that addresses climate change and the regulation of GHG emission, set science-based, state-wide goals and standards and assist in managing cumulative impacts and achieving long-term outcomes	• A PEP must be taken into consideration when making certain decisions under the POEO Act, other environmental protection legislation, the *Environmental Planning and Assessment Act 1979*, or undertaken by a public authority exercising certain function (POEO Act, Part 2.7). • Failure to consider a PEP as required would be a breach of the POEO Act.

Case study 3: Dr Anika Molesworth, Farmer and agro-ecologist

Anika Molesworth is the 2015 Australian Young Farmer of the Year, Founder of Climate Wise Agriculture, a founding member of Farmers for Climate Action, and a recent PhD graduate on the topic of organic soil amendments in irrigated cropping systems. She is currently writing a book about climate change impacts on agriculture and farmers. Here Anika reflects on her experience growing up and working on the family sheep farm in western NSW, and her experience of the impacts of climate change on agriculture, farming practices and her local community.

I live on, and help manage, the family sheep stations, Rupee and Clevedale, near Broken Hill. Together, the properties comprise 10,000 acres of which approximately 8,000 acres are used for pastoral grazing, running Dorper sheep and harvesting feral rangeland goats. I hold a Bachelor of Science (Agriculture-Agribusiness), a Master of Sustainable Agriculture and have completed a PhD on the topic of organic soil amendments in irrigated cropping systems.

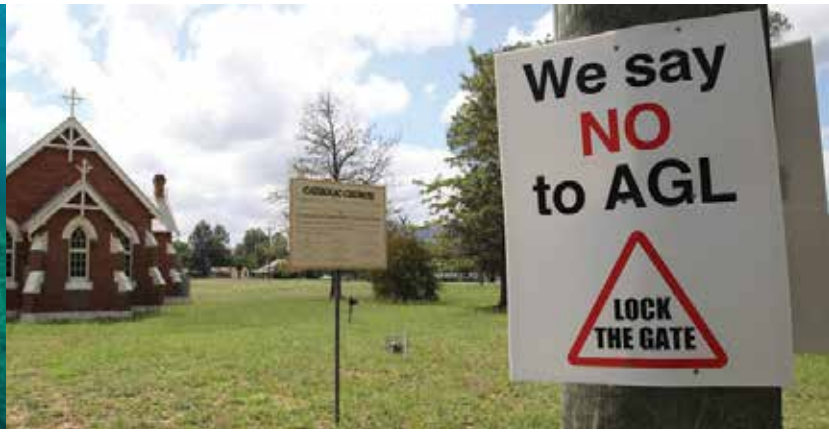
I was one of the founding members of Farmers for Climate Action (FCA) and am currently one of FCA's directors. FCA is an alliance of farmers and leaders in agriculture who are working with their peers, the wider community and political leaders to ensure Australia takes the actions necessary to address damage to the climate and establish pillars of support for the farming community.

My family purchased Rupee Station in 2000 and Clevedale Station in 2003. I recall that when my family first conducted the property inspections before buying Rupee Station, it looked relatively green, there was an abundance of wildlife and there was water in the dams. After my family bought the property, there was very little rainfall for the next 10 years and the seasons got progressively worse. This came to be known as the Millennial Drought. Our original plan to produce bush tucker foods, growing native plants like wattles and quandongs was not a viable option with such little rainfall. Instead we turned to livestock.

In the 20-year period since my family purchased Rupee Station, we have had only 5-6 good years. The last four of five years have been incredibly dry. Because of the increasing heat, prolonged drought and decreasing availability of water, we have had to largely destock Rupee and Clevedale. Now I look back at photos of the Millennium Drought and I think "wow, it was green back then". When I flew out of Broken Hill late last year, the landscape looking down was nearly unrecognisable. It had desertified.

I have observed a reduction in the diversity and number of plants over several years. When the rain stops falling, less vegetation grows on the ground. I no longer observe the insect life or wildlife that used to be supported by vegetation. There is a decreasing range and number of birds. In September last year we planted about 300 seedlings of grasses, wattle, mulga and eucalypts. We then had extreme heat and little rainfall and now only about 10% of those seedlings are alive.

We experience higher temperatures than in the past. We experience terrible dust storms in the summer now. The rain that does fall now comes in small amounts, and if it is a hot, windy day the water is gone within a few hours – there appears to me to be no infiltration of moisture into the soil profile. This past summer we had to truck in water for the first time since we purchased Rupee Station. The drought has had a very real toll on my community. Multi-generational farmers are selling their properties and shops are closing up. It is heartbreaking.



4.2 Schemes for Economic Measures

4.2.1 Outline of legal framework

Part 9.3 of the POEO Act provides that the EPA may develop and implement schemes involving economic measures as a means of achieving cost-effective environmental regulation or environment protection.[47]

It also provides that:

- The EPA may approve of the development and implementation of such a scheme by other regulatory authorities;[48]
- Without limiting the above, such a scheme may involve measures that provide an economic incentive for avoiding or minimising harm to the environment when carrying out an activity;[49] and
- An example of such a scheme is a tradeable emission scheme, as referred to in Part 9.3A, or a green offset scheme, as referred to in Part 9.3B.[50]

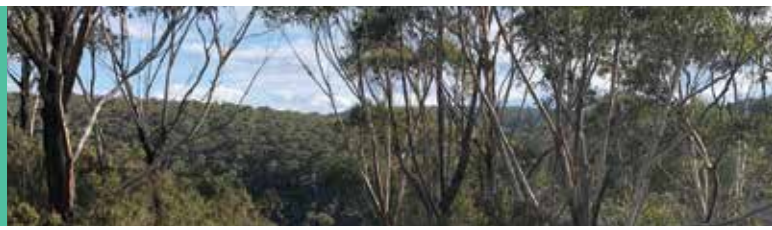
These powers are quite broad and do not appear to be limited to schemes established by regulations. That is, while the POEO Act provides that the regulations may make provision for, or with respect to, the development or implementation of schemes involving economic measures,[51] and existing schemes are implemented via regulation (e.g. the Hunter River Salinity Trading Scheme is established and implemented by the *Protection of the Environment Operations (Hunter River Salinity Trading Scheme) Regulation 2002)*, the POEO Act does not require that the EPA implement its scheme via regulation. Based on a broad reading of the provisions of the POEO Act and POEO Act, the EPA could develop schemes involving economic measures via guidelines or policies. These could then be implemented through existing EPA powers, such as via conditions on EPLs (see discussion at 4.3).[52] Such schemes would set an appropriate price signal for reducing GHG emissions in NSW, consistent with the polluter pays principle, and assist in the transition to a zero-carbon economy.

4.2.2 Emissions trading schemes

Emissions trading schemes (**ETSs**) are carbon pricing mechanisms that generally operate as 'cap and trade' schemes, putting a capped limit on total emissions and allocating 'units' which can be bought and sold by participants. Those that emit pollutants must hold sufficient 'units' to cover their emissions, whereas participants with excess units (which could be achieved through emissions reduction) can sell their units.

'Cap and trade' schemes currently operate for pollutants other than GHG emissions. For example, the NSW Hunter River Salinity Trading Scheme is a 'cap and trade' scheme that regulates the discharge of saline industrial pollution (e.g. from mining and electricity generation) into the NSW Hunter River, through a market-based credit scheme.[53]

NSW was the first jurisdiction in the world to establish a mandatory trading scheme for GHG emissions. The NSW Greenhouse Gas Abatement Scheme (**GGAS**) operated from 2003 until 2012 and was administered by the NSW Independent Pricing and Regulatory Tribunal (**IPART**). During its operation, GGAS was estimated to have



achieved GHG abatement of 144 million tonnes of CO2 equivalent (**tCO2e**).[54] The GGAS was a baseline-and-credit system that set an emissions baseline (called the State Greenhouse Gas Benchmark) expressed as a tCO2e per capita, which commenced at 8.65 tCO2e per capita in 2003 and reduced each year until 2007-2012, where it reached and remained at 7.27 tCO2e per capita. The scheme provided for both tradeable and non-tradeable "abatement certificates" which could be surrendered by participants to meet their obligations under the scheme.

The GGAS was closed to avoid duplication with the Commonwealth Government's short-lived carbon pricing scheme introduced by the *Clean Energy Act 2012* (Cth) which ran from 2012 to 2014. The interim carbon pricing mechanism established under the (now repealed) *Clean Energy Act 2011* (Cth) and associated instruments resulted in Australian GHG emissions dropping by an estimated 11-17 million tonnes.[55] However, with the repeal of the *Clean Energy Act 2012* (Cth), there is now a regulatory gap in carbon pricing mechanisms.

In the United States of America, the Regional Greenhouse Gas Initiative (**RGGI**)[56] is a state-based mandatory cap-and-trade scheme aimed at reducing GHG emissions from the power sector, with ten participating states[57] and a further two states committed to join in the near future.[58] The RGGI was established in 2005, with the first annual auction of CO2 emissions allowances in 2008. The RGGI requires fossil fuel power plants with capacity greater than 25MW to obtain an allowance for each tonne of CO2 emitted annually, with the emissions cap reduced by 2.5% each year between 2015 and 2020. As at the 2015-2017 period, average CO2 emissions from sources covered by the RGGI have decreased by 45% since the 2006-2008 base period.[59] However, as it only covers emissions from the power sector, only approximately 20% of the emissions from the relevant jurisdictions are covered by the scheme.

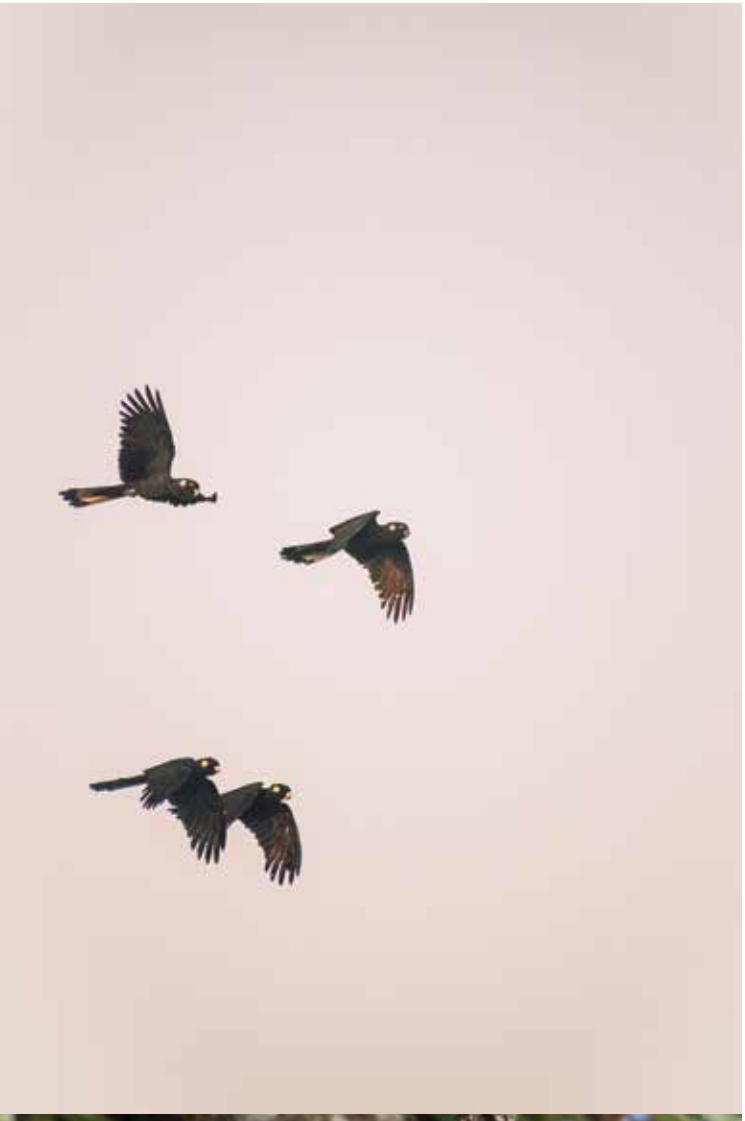
California has its own cap-and-trade scheme for GHG emissions.[60] This scheme is not limited to the power sector (unlike the RGGI) and encompasses activities amounting to approximately 85% of California's GHG emissions. California met its goal of reaching 1990 level emissions by 2020 four years early (in 2016), and in the period from 2013 (when the California ETS commenced) to 2017, state-wide GHG emissions decreased 5.3%.

The European Union's Emission Trading Scheme (**EU ETS**) began in 2005 and is currently the world's biggest ETS scheme.[61] The EU ETS limits emissions from more than 11,000 heavy energy-using installations (power stations & industrial plants) and airlines operating between these countries across all EU countries as well as Iceland, Liechtenstein and Norway, covering approximately 45% of the EU's GHG emissions.[62] The EU ETS aims for 2020 emissions from sectors covered by the system to be 21% lower than in 2005.

The New Zealand Emissions Trading Scheme (**NZETS**) began in 2008. It applies to the following sectors: forestry, stationary energy, transport, industrial processes, synthetic GHGs and waste. Agricultural emissions (animal production and nitrogen fertilisers) are covered by reporting requirements only.[63] This year, changes to the scheme introduced by the *Climate Change Response (Emissions Trading Reform) Amendment Act 2020* (NZ) will allow a cap to be set on emissions covered by the scheme. The cap requires an emissions budget to be established. The cap will decline over time as emissions budgets reduce in line with emissions targets.[64]

ETSs for GHG emissions also operate in other jurisdictions, including South Korea[65] and Tokyo (an urban based ETS covering office buildings and other commercial facilities).[66]

Despite the Commonwealth Government replacing its carbon pricing scheme with the Emissions Reduction Fund, a trading scheme for GHG emissions has never been re-established in NSW.



Given the success of emissions trading schemes in various jurisdictions in reducing GHG emissions, and in light of the ongoing absence of a Commonwealth carbon pricing mechanism, emissions trading may be an appropriate mechanism for reducing GHG emissions in NSW.

While the previous NSW GGAS was administered by IPART, a new scheme could be developed by the EPA independently or in collaboration with IPART or other parts of the NSW Government.[67]

Part 9.3A of the POEO Act outlines how an ETS could be developed under the POEO Act. However this does not impinge on the broad power of the EPA to develop and implement schemes involving economic measures as a means of achieving cost-effective environmental regulation or environment protection under Part 9.3. For example, section 295D of the POEO Act anticipates conditions related to a tradeable emissions scheme being attached to an EPL in accordance with Chapter 3 of the POEO Act. This would allow the EPA to implement and enforce any scheme it developed via EPL conditions.

4.2.3 Green Offsets Schemes

In essence, offsets schemes allow an action that would cause environmental harm to proceed, and that environmental harm to be 'offset' by another action that would 'compensate' for that environmental harm. General examples of common offset schemes include biodiversity offsetting (for example, the Biodiversity Offsets Scheme established by the NSW *Biodiversity Conservation Act 2016*[68]) or carbon offsetting schemes (for example, the voluntary Carbon Farming Initiative run by the Commonwealth Department of Agriculture, Water and the Environment to allow land managers to earn carbon credits by changing land use or management practices to store carbon or reduce GHG emissions[69]).

Part 9.3B of the POEO Act outlines how green offsets schemes could be developed under the POEO Act. However, this does not impinge on the

broad power of the EPA to develop and implement schemes involving economic measures as a means of achieving cost-effective environmental regulation or environment protection under Part 9.3. For example, section 295N of the POEO Act anticipates conditions relating to a green offsets scheme being attached to an EPL in accordance with Chapter 3 of the POEO Act. This would allow the EPA to establish a green offsets scheme (e.g. via guidelines or policy) requiring licenced activities to offset GHG emissions and implement this via conditions imposed on an EPL. The LBL Review (see 4.3.5 below) is considering the option of developing a green offsets policy to complement the LBL scheme.[70]

In general, however, the Environmental Defenders Office cautions against the reliance on offsets schemes to justify environmental harm, as they rarely deliver the positive environmental outcomes intended. For example, the Climate Council report *Land Carbon: No Substitute for Action on Fossil Fuels*[71] identifies significant concerns with offsetting carbon emissions produced by fossil fuels with what they call "land carbon" offsets.

Land carbon offsets can include avoiding clearing old growth vegetation; protecting and increasing regrowth; increasing soil carbon; and protecting carbon stored in coastal ecosystems. Land carbon offsets operate within the "active" carbon cycle – this is carbon that moves between the land, ocean and atmosphere. While land carbon can be increased, it is vulnerable to loss from activities such as bushfires, droughts, insect attacks and heatwaves, all of which can release significant amounts of land carbon into the atmosphere, returning it to the "active" carbon cycle.[72]

In contrast, carbon in fossil fuels has been locked away for millions of years. Therefore, burning fossil fuels and releasing carbon dioxide to the atmosphere introduces a store of carbon that is additional to the current "active" carbon cycle. While the land and ocean will absorb some of this extra carbon, almost half of the carbon dioxide emitted from fossil fuel combustion remains in the atmosphere, driving global warming.[73] According to the Climate Council report, current annual global carbon emissions from fossil fuels are ten times greater than the annual amount of carbon that could be stored by sustainable land carbon mitigation methods.[74]

If a carbon offsets scheme were to be established, it must reflect best practice, including that carbon offsets must only be used as a last resort and only 'like-for-like' offsets are allowed (i.e. carbon emissions from fossil fuels must be offset within the same sector (e.g. through permanent capture and storage), and other measures such as other environmental works should not be permitted).

4.2.4 Other financial incentives for emissions reduction

The regulation of GHG emissions by the EPA should complement, but not replace, existing programs that seek to reduce GHG emissions through financial emissions reduction incentives. For example, programs run under the Commonwealth Emissions Reduction Fund,[75] NSW Climate Change Fund,[76] and NSW Emissions Intensity Reduction Program,[77] which provide incentives for GHG emissions reduction, including through investment in renewable energy and advancements in technology, should be continued. However, these programs alone are unlikely to ensure that we are reducing GHG emissions consistent with efforts to limit global average temperature rise to 1.5°C above pre-industrial levels.[78] In our view a combination of both a strong regulatory framework aimed at reducing GHG emission pollution and waste, including with appropriate pricing on carbon pollution, and strong incentives to support emissions reduction initiatives is needed to drive down emissions at the rate and to the extent needed.

4.3 Environment Protection Licences (EPLs)

4.3.1 Outline of EPL framework

Chapter 3 of the POEO Act sets out a framework for regulating polluting activities through EPLs. 'Scheduled activities' (being those listed in Schedule 1 of the POEO Act) must have a pollution licence covering one or more forms of pollution (e.g. air, water and noise pollution). 'Scheduled activities' are generally heavy or high-polluting activities or industries, and may be:

- Premise-based (that is, a licence is required for premises at which the activity is carried on).[79] Examples of premise-based scheduled activities are chemical production, extractive activities, livestock intensive activities, mining for coal and other minerals, coal seam gas exploration, assessment and production, sewage treatment and waste disposal. Listing as a scheduled activity is often based on criteria that may include the size or intensity of the activity being undertaken at the premises, or the sensitivity of the receiving environment (for example, a water-based extractive activity which produces more than 30,000 cubic metres per year, or a cement works that has a capacity of 150 tonnes per day or more, must have a pollution licence); or
- Non-premise based (that is, a licence is required to carry on the activity, but not for the premises at which the activity is carried on).[80] These are activities not located on a specific site and include mobile waste processing and transportation of trackable waste.

Generally, EPLs are issued by the EPA.[81] It is an offence to carry out a scheduled activity without a pollution licence.[82]

In issuing an EPL, the EPA (or other regulatory authority) is required to take into consideration the matters identified in section 45 of the POEO Act, which include:

- any protection of the environment policies (see discussion below at 4.6);
- the objectives of the EPA as referred to in section 6 of the POEA Act;
- the pollution caused or likely to be caused by the carrying out of the activity or work concerned and the likely impact of that pollution on the environment;
- the practical measures that could be taken—
  - to prevent, control, abate or mitigate that pollution; and
  - to protect the environment from harm as a result of that pollution;
- any relevant green offset scheme, green offset works or tradeable emission scheme or other scheme involving economic measures, as referred to in Part 9.3 of the POEO Act (see discussion below at 4.4);
- any documents accompanying the application, any relevant environmental impact statement, or other statement of environmental effects, prepared or obtained by the applicant under the *Environmental Planning and Assessment Act 1979* (**EP&A Act**), any relevant species impact statement;
- any waste strategy in force under the *Waste Avoidance and Resource Recovery Act 2001*;
- any public submission in relation to the licence application received by the appropriate regulatory authority under the POEO Act, and any public submission that has been made under EP&A Act, in connection with the activity to which the licence application relates, and that has been received by the appropriate regulatory authority; and
- if the appropriate regulatory authority is not the EPA - any guidelines issued by the EPA to the authority relating to the exercise of functions under Chapter 3 of the POEO Act.

4.3.2 Licence conditions and fees

The EPA has broad powers to attach conditions to EPLs. Specifically, section 63 of the POEO Act provides that:

- A licence may be issued subject to conditions or unconditionally;
- A condition cannot be attached to a licence if compliance with the condition would result in a breach of a requirement made by or under the POEO Act; and
- If the holder of a licence cannot meet any requirement made by or under the POEO Act without contravening a condition of the licence, the holder is, by meeting the requirement, taken to comply with the condition (that is, requirements under POEO Act prevail over inconsistent condition requirements).

Part 3.5 of the POEO Act contains examples of conditions that can be attached to a licence but is clear that nothing in that Part prevents other conditions being attached to a licence.[83] The EPA's Guide to Licensing (2016) explains that:

"The conditions are aimed at preventing or minimising the environmental impacts from the licensed activity. The conditions could, for example, limit the amount of noise that can be emitted by your licensed activity, or require you to monitor pollutants or ensure that your operating procedures are environmentally acceptable. In some cases you may be required by the conditions of licence issued to you to develop and implement a pollution reduction program (PRP). The aim of a PRP is to reduce the environmental impact of your activity over time".[84]

It is an offence to fail to comply with licence conditions.[85]

Licences are also subject to fees, as prescribed by the Regulations.[86] For example, load-based licensing fees are set in correlation to the potential environmental impact of a polluting activity.

Specific examples of licence conditions or fees that could be used to regulate GHG emissions including limit conditions (4.3.3), Pollution Reduction Programs (see 4.3.4) and load-based licensing fees (see 4.3.5) are set out below.

4.3.3 Limit conditions

Some pollution limits are set in legislation. For example, Part 5.4 of the POEO Act and the POEO (Clean Air) Regulation regulate emissions from wood heaters, fires (e.g. controlled burning), motor vehicles and fuels and industry by prescribing standards (non-compliance with which is an offence) and prohibiting certain activities directly. However, where pollution limits are not set in legislation, EPL licence conditions can be used to impose limits on pollution.

EPLs are often structured as follows:

- Administrative conditions;
- Discharges to air and water and applications to land (identifying the location of monitoring/ discharge points and areas);
- **Limit conditions** (including conditions relating to pollution of waters, load-based limits, concentration limits, waste, odour, hours of operation and noise) (*emphasis added*);
- Operating conditions;
- Monitoring and recording conditions;
- Reporting conditions;
- General conditions; and/or
- Special conditions.

The EPA could seek to reduce GHG emissions by imposing GHG limits on EPLs. The EPA could develop a guideline or policy that outlines how GHG emissions can be assessed and reduced and could set standards that could then be imposed via conditions on EPLs.

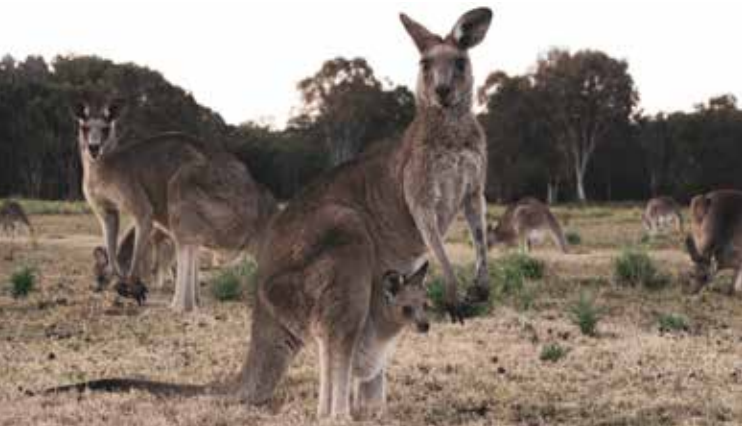
4.3.4 Pollution Reduction Programs

The EPA has the power to order licenced facilities to implement Pollution Reduction Programs (**PRPs**) to prevent, control, abate or mitigate pollution.[87]

PRPs are a potentially powerful tool for reducing pollution, but they tend to have been underutilised, or used inappropriately. In practice, PRPs are used to implement solutions to continuing environmental issues and non-compliance with the POEO Act.[88] This means that they are not used proactively as an upfront regulatory tool, but rather are only used reactively, once problems become apparent. Further, when used as a reactive tool in this way, PRPs become a poor substitute for strong enforcement action; prosecution of environmental offences under the POEO Act would be a stronger regulatory response to repeated pollution licence breaches.

Alternatively, PRPs could be imposed as a standard licence condition at the time of licence approval to outline specific actions that must be taken to prevent, control, abate or mitigate pollution, including GHG emissions. The process could provide industry with the opportunity to propose how it could achieve continuous improvement in pollution control (e.g. adopting certain technology) and this would be considered in developing the PRP for each facility. For existing facilities, PRPs could be progressively introduced at the five-yearly licence review.

The EPA could facilitate emissions reductions through PRPs designed to prevent or limit GHG emissions.



4.3.5 Load-based licensing

The NSW load-based licensing scheme (**LBL scheme**) operates under the POEO Act and the *Protection of the Environment Operations (General) Regulation 2009*, which sets out regulated pollutants and a licence fee system for the LBL scheme.[89]

The LBL scheme delivers an economic mechanism for reducing pollution and improving the environmental performance of polluting industries in NSW. It is based on the polluter pays principle - there is a direct correlation between the amount of licence fee and the potential environmental impact of an activity. In short, the higher the impact, the higher the fee.

The LBL scheme has a number of advantages. It operates to:

- provide a tool to address cumulative impacts of pollutants;
- provide a financial incentive for licence holders to reduce pollution;
- encourage industry to invest in innovative ways to reduce pollution; and
- shift the costs of pollution from the community to those who pollute.

However, the scheme does have a number of deficiencies,[90] namely:

- the LBL scheme currently does not apply to coal mining and other related industries;[91]
- the fees are not set at the appropriate level (relative to environmental harm and in order to be a sufficient deterrent);
- the licensing fee system covers an inadequate set of pollutants;
- GHG emissions are not regulated as pollutants;[92] and
- the fees generated from the system could be better used to advance environment protection goals.

A review of the LBL scheme (**LBL Review**) was commenced in 2016 but has not yet been finalised.[93] As part of that review the Environmental Defenders Office has recommended that GHG emissions be added as a regulated pollutant under the LBL scheme.[94]

The delay in finalising the LBL Review is a missed opportunity to bring the LBL scheme in line with the best available science on the impacts of GHG emissions and the risks posed to human health and the environment in NSW, and to ensure that the polluter pays principle is properly applied so that GHG emitters are responsible for the environmental harm caused by GHG emissions.

In order to effectively regulate GHG emissions to ensure environment protection, the EPA must finalise the LBL Review and the LBL scheme must be updated to:

- expand the scope of the LBL scheme to include mining for coal and other related activities (which are currently not regulated by the LBL scheme);
- include carbon dioxide and methane (as well as other pollutants not currently captured by the LBL scheme) as assessable pollutants under the LBL scheme (particularly for electricity generation, petroleum exploration, assessment and production and mining for coal); and
- increase fees to be more reflective of the costs of pollution on society and drive cleaner production.

This will ensure the real costs to the environment and the health of the community are factored into the cost of industry. The inclusion of GHG emissions in the LBL scheme is also consistent with the views of licensees under the LBL scheme who recommended that *"Greenhouse gases have an environmental impact and should be added to the scheme. This includes carbon dioxide, methane and nitrous oxide".*[95]

In order to give industry and communities the opportunity to adapt, the EPA could consider staged commencement (determined and fixed upfront), with any LBL fees for GHG emissions starting at a lower level[96] and then rapidly rising according to a regulated schedule developed in consultation with a climate advisory committee, community and licensed businesses. However, given the urgent need to reduce GHG emissions, and the existence of long-standing prices on carbon in international jurisdictions, fees must quickly be set at the appropriate level to ensure effective emissions reduction.[97]

An additional benefit of the LBL scheme is that it can be adjusted according to the surrounding legislative environment. For example, in the absence of other regulation of GHG emissions, the elements of the LBL scheme (such as the weightings and thresholds) could be set to impose strict and severe LBL fee structures on the relevant operators. However, in the event an alternative regulatory scheme is introduced (such as an emissions trading scheme), elements of the LBL scheme could be relaxed to avoid duplication of regulation.

Fees collected from the LBL scheme could be invested into additional emissions reduction initiatives, consistent with the polluter pays principles that those who generate pollution and waste should bear the cost of containment, avoidance or abatement. This may require regulatory changes because currently LBL fees are paid into the NSW Consolidated Revenue Fund,[98] which does not make them automatically available to the EPA. The LBL Review has proposed a number of options for revenue recycling that would allow LBL fees (or part thereof) to be re-invested into pollution abatement.[99] However there is a risk with proposals that would see LBL fees returned to industry (e.g. via grants for emissions reductions initiatives), as this may undermine the intent of the LBL scheme. The EPA should retain LBL fees to be re-invested into dealing with pollution issues which are poorly understood or that are difficult to address at the source – e.g. cumulative pollution (such as GHG emissions) where there are a large number of sources of pollutants.[100]

4.4 Pollution and Waste Standards or Limits

4.4.1 Non-statutory standards or limits

The EPA could develop guidelines or policies for the regulation of GHG emissions, and in particular, guidelines and policies that set standards or limits on GHG emissions. These standards or limits could then be implemented via conditions on EPLs by the EPA.

For example:

- The EPA's *Noise Policy for Industry* (2017) outlines requirements for the assessment and management of noise from industry in NSW and sets noise levels for industrial activity.[101] It applies to activities listed in Schedule 1 of the POEO Act and regulated by the EPA (scheduled activities) and should also be considered by authorities assessing major development proposals under the EP&A Act. The *Noise Policy for Industry* recognises that noise limits can be set via conditions in either the EPL or development consent under the EP&A Act. Noise limits are determined through the process described in this policy.
- The EPA's *Standards for managing construction waste in NSW* (2019) were introduced to ensure that waste facilities handling construction waste implement appropriate processes and procedures to minimise the risk of harm to human health and the environment posed by asbestos, and to improve community and industry confidence in the quality of the recycled products they use. The standards are implemented via the *Protection of the Environment Operations (Waste) Regulation 2014*. Clause 90C(1) provides that it is a condition of an EPL for a scheduled construction and demolition waste facility that the requirements set out in the Standards for managing construction waste in NSW are complied with.
- The EPA has been looking at ways to better regulate non-road diesel and marine emissions.[102] The EPA recognised a regulatory gap - there were no regulations applying to emissions from non-road diesel vehicles or equipment in Australia except in underground coal mines. Its *Diesel and Marine Emissions Management Strategy* (2015) has the key objective to 'progressively control and reduce diesel and marine emissions from priority sectors – shipping, locomotives and non-road equipment used by EPA-licensed industry and in government activities'.[103] The Strategy is aimed at particulate matter and other air pollutants such as sulfur dioxide, however it does not cover GHG emissions. While the Strategy commits to investigating minimum performance standards for non-road diesel equipment used for identified scheduled activities, we are not aware of standards having been developed or implemented.

The EPA could develop a guideline or policy that outlines how GHG emissions can be assessed and regulated by certain industry and sets standards for decision-makers to consider in assessing and determining EPL applications and issuing licence conditions under the POEO Act. Such guidelines could also assist proponents and decision-makers in assessing and determining development applications or activities under the EP&A Act.

4.4.2 Statutory standards or limits

Part 5.4 of the POEO Act and the POEO (Clean Air) Regulation currently regulate emissions from wood heaters, fires, motor vehicles and fuels and industry. It does this in a number of ways including prescribing standards or limits (non-compliance with which is an offence) and prohibiting certain activities directly (e.g. in the case of burning certain articles).

The scope of the POEO Act and POEO (Clean Air) Regulation could be expanded to include the regulation of GHG emissions. That is, where certain sources of pollution are already regulated under the POEO (Clean Air) Regulation, regulation could be expanded to include GHG emissions, where appropriate.

For example, the POEO (Clean Air) Regulation imposes standards of concentrations for air

impurities released from scheduled premises.[104] Notably, this includes coal-fired power stations with capacity to generate more than 30 megawatts of electrical power, metropolitan electricity works (gas turbines), and metropolitan electricity works (internal combustion engines).[105] GHG emissions are not listed as a regulated air impurity (see Schedule 3 and 4 of the POEO (Clean Air) Regulation), despite the stationary energy sector (primarily public electricity production) being the largest source of NSW GHG emissions (51%).[106]

The POEO (Clean Air) Regulation could be amended to prescribe standards for GHG emissions that must be met by scheduled activities, or at the very least for those activities that are the highest emitters of GHG emissions including electricity generation (from any energy source other than wind power or solar power).[107] Standards for fossil fuel power plants were introduced by the Obama administration in the United States of Amercia (US) (see **Box 1 - US 'Carbon Pollution Standards' for fossil fuel power plants**).

Box 1 - US Carbon Pollution Standards for fossil fuel power plants

In light of both the reluctance of Congress to pass a market-based GHG emission reduction mechanism and the decision in *Massachusetts v Environment Protection Agency*, the Obama administration, among other things, in 2015 set performance standards under the *Clean Air Act 1977* for new fossil fuel power plants. The Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources set limits - in the form of the maximum allowable carbon dioxide emissions per unit of electricity - on GHG emissions from power plants.[108] New gas-fired power plants could emit no more than 1000lb CO2e/MWh, and new coal-fired power plants no more than 1400lb CO2e/MWh. In the case of coal-fired plants, in order to meet the standard, this would have required the use of carbon-capture-and-storage technology.[109] Work was also underway to place performance standards on existing fossil fuel power plants, however this was suspended under the Trump administration.

In 2018, the US EPA proposed changes to Standards of Performance for Greenhouse Gas Emissions From New, Modified, and Reconstructed Stationary Sources.[110] The new rule would establish new emission limits, based on the "best system of emission reduction" identified by the agency, for new, reconstructed, and modified coal-fired steam electric generating units. These proposed limits are substantially less stringent than their Obama-era iteration, setting limits of 1900 lb CO2e/MWh for large fossil fuel steam generating units; 2000 lb CO2e/MWh for small fossil fuel fires steam generating units; and 2,200 lb CO2e/MWh for coal refuse-fired sources. As at September 2020, this proposal had yet to be finalised (made) by the US EPA, despite indications that it would be by (northern hemisphere) summer 2020.[111]

Case study 4: Dr Sam Tormey, GP

Dr Sam Tormey has been a Senior General Practitioner Visiting Medical Officer at South East Regional Hospital since 2010 and from 2011 to 2015 was also a general practitioner in Bega. Here Dr Tormey reflects on his experience of a changing climate and bushfires on the health of people in his local community.

For the last 20 years, I have practised in rural New South Wales and I have observed more patients suffering heat-related symptoms, particularly elderly patients. The effects of extreme heat are much less visible than the impacts of bushfires on human health, but it can be more deadly. I have seen more and more elderly patients suffer from cardiac events, falls because of low blood pressure, dehydration from not keeping up their fluids, and fainting in public. Part of my job is to admit people to the morgue if they have died at home. I have observed that over time, more people have become unwell or died in heatwaves.

During my time practising as a doctor in the Bega Valley, there have been two major bushfires: the Tathra 2018 bushfire and the 2019/2020 summer bushfires.

The Tathra bushfire began on an extremely hot day in late March. It was a very rapidly moving bushfire which was terrifying. It damaged or destroyed about 100 houses in Tathra, a town with about 600 houses in total. My neighbours and some of my patients who had lived in Tathra for a long time told me it was very unusual to have a day that hot and dry in late March.

At the hospital I saw people who had been fighting the fire at their homes and reached the point of exhaustion. I saw people who had chronic respiratory illnesses badly affected by the fire, and people without chronic respiratory conditions getting respiratory symptoms such as persistent cough and shortness of breath. I saw a lot more people who had psychological or psychiatric effects from the stress of the fire and then the stress of being dislocated from their community and their support networks because the whole town was evacuated.

The summer 2019/2020 bushfires were huge. By late December, Bega was surrounded by fire. People I spoke to about the 2019/2020 bushfires said they had not seen a fire event like that and they had not seen fires behave like that.

The inside of the hospital was smoky. Even though it was a brand new hospital we could not keep the smoke outside. I saw patients who had suffered from weeks of bad smoke exposure. In the long term, exposure to bushfire smoke is potentially carcinogenic. I saw people with heat exhaustion. Exposure to bushfire smoke is inflammatory and when it is combined with extreme exertion and heat exhaustion, it can lead to heart attacks. I saw one man who had a major heart attack in the midst of the fire who had heat exhaustion and dehydration.

I am now seeing a second wave of symptoms related to the bushfires. Although the hospital was set up to receive a lot of people with burns, what I have mostly seen arising from the fires are people with acute mental health distress and people with respiratory distress. I am also seeing people who tell me they are having difficulties with their insurers. Recently, I saw three people who were still living in temporary accommodation who are waiting for their homes to be rebuilt. I am also seeing people who had not previously sought professional help for the trauma they experienced in the bushfires and who are now having breakdowns.

4.5 Monitoring and Reporting

In order to ensure effective reduction of GHG emissions, there must be adequate and reliable GHG emission monitoring and reporting that is fit for purpose.

For example, the LBL Scheme already requires licensees to monitor and report on regulated pollutants. Therefore, if GHG emissions are to be regulated via the LBL Scheme, appropriate monitoring requirements should be introduced through EPL conditions. Improving the effectiveness of monitoring under the LBL Scheme is under consideration as part of the LBL Review.[112]

Under Part 9.3C of the POEO Act, the EPA may investigate the need for and subsequently develop and implement an environmental monitoring program to monitor the impact on the environment and human health of activities or works authorised or controlled by licences (including pollution resulting from those activities or works). Both the existing Upper Hunter Air Quality Monitoring Network and Newcastle Local Air Quality Monitoring Network are examples of environmental monitoring programs that have been set up under the POEO framework. In the broader context of regulating GHG emissions, the EPA should investigate the need for an environmental monitoring program for GHG emissions.

If considered as part of a broader Protection of the Environment Policy (see 4.6 below), the EPA could potentially recommend a broader whole-of government scheme for the monitoring and reporting of GHG emissions (potentially not just limited to licenced facilities).

Any EPA program to monitor and report on GHG emissions could draw on and supplement – not duplicate - data already published by the National Greenhouse and Energy Reporting (NGER) scheme.[113]

4.6 Protection of the Environment Policies

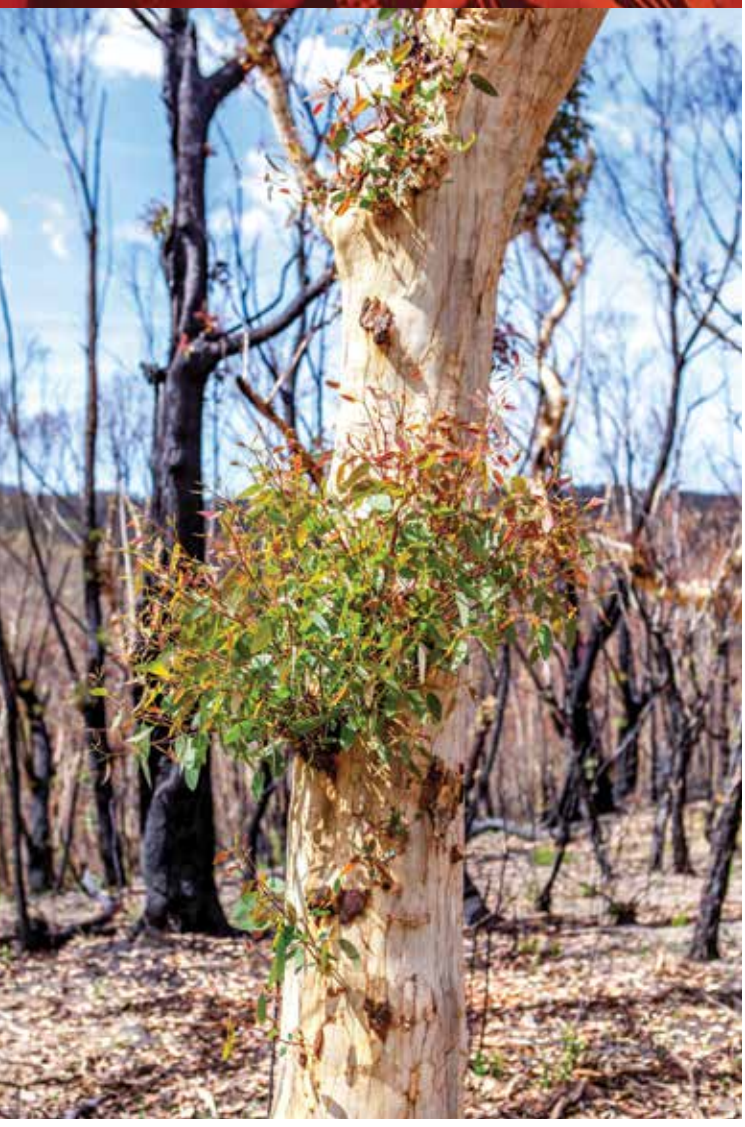
4.6.1 Overview of PEPs

Chapter 2 of the POEO Act sets up a legislative framework for declaring policies for protecting the environment in NSW - PEPs.

Under section 10 of the POEO Act, PEPs can establish policies for protecting the environment in NSW and, in particular, for the purpose of (a) furthering the objectives of the EPA as set out in section 6 of POEA Act; and (b) managing the cumulative impact on that environment of existing and future human activities.

Chapter 2 has been in the POEO Act since its inception in 1997, but to date no PEPs have been declared. At the time the POEO Act was introduced, the then Minister for the Environment, the Hon. Pam Allan, described PEPs as follows:

"Protection of the environment policies are very broad policy instruments that must be taken into account by public authorities, the EPA and planning authorities when they are making decisions affecting the environment. We have received some comment in the consultation phase that PEPs may not be strong instruments because they do not have offence-making provisions in them. I want to make it clear that these are statutory instruments that bring forward government policy. PEPs will be put into effect through a wide range of mechanisms such as licences, development consents and regulations that are clearly enforceable instruments. These policies will enable the Government to deal more effectively with the cumulative impacts of development by setting out the ambient environmental goals that the entire community is striving for. We have deliberately made the scope of PEPs very broad to be able to deal with the diverse circumstances that we face in bringing forward programs. For example, a PEP could set standards for air quality or set water quality goals and programs to achieve them for the Hawkesbury-Nepean region".[114]



Generally, the legislative framework for preparing and declaring PEPs provides that:

- The EPA can initiate the preparation of a draft PEP in its own right or may be directed to prepare a draft PEP by the Minister.[115]
- A PEP must specify one or more of the following— (a) an environment protection goal; (b) an environment protection standard; (c) an environment protection guideline; or (d) an environment protection protocol.[116]
- A PEP containing an environment protection goal may specify a program by which that goal is to be achieved, and performance indicators by which the achievement of that goal is to be measured.[117]
- A PEP may be made for the purpose of implementing in NSW a national environment protection measure.[118]
- A PEP may be made in respect of the following— (a) the whole or any part of the State; (b) the environment generally or any part of it; (c) any activity that may impact, or has impacted, on the environment; (d) any form of pollution; (e) any aspect of waste; (f) any kind of technology or process; (g) any kind of chemical or other substance that may impact, or has impacted, on the environment; (h) any matter in respect of which national environment protection measures may be made.[119]
- In preparing a draft PEP, the EPA must take into consideration—
  - the environmental, economic and social impact of the policy;
  - the simplicity, efficiency and effectiveness of the administration of the policy;
  - any environmental planning instruments that the EPA considers relevant (including any such draft instruments that are publicly available and are still current);
  - any national environment protection measures that the EPA considers relevant (including any such draft measures that are publicly available and are still current);

  - the principles of environmental policy set out in the Intergovernmental Agreement on the Environment, as in force for the time being; and
  - any regional environmental differences within NSW.[120]
- The EPA must prepare an impact statement relating to the draft PEP, which includes the following:
  - the desired environmental outcomes;
  - the reasons for the policy and the environmental impact of not making the policy;
  - a statement of the alternative methods of achieving the desired environmental outcomes and the reasons why those alternatives have not been adopted;
  - an identification and assessment of the economic and social impact on the community (including industry) of making the policy;
  - a statement about the manner in which any regional environmental differences in NSW have been addressed in the development of the policy;
  - the intended date for the making of the policy;
  - the timetable (if any) for the implementation of the policy; and
  - the transitional arrangements (if any) in relation to the policy.[121]
- The EPA prepares a draft PEP, which is then notified for public consultation. Consultation must also be undertaken with such public authorities, organisations or persons as the Minister directs or as the EPA thinks appropriate.[122]
- The EPA submits a draft PEP to the Minister with a recommendation that it be made (or not, in the case where the EPA is directed to prepare a draft PEP).[123]
- A PEP is made by the Governor on recommendation of the Minister.[124]

The EPA could seek the advice of a climate advisory committee to advise on the development of a PEP (as noted above, the EPA can establish advisory committees under Part 6 of the POEA Act).

A PEP would be an appropriate mechanism for the EPA (and the State of NSW more broadly) to address the broad and cumulative impacts of GHG emissions and climate change. It would allow overarching goals and standards to be established and identify mechanisms for achieving those goals. Such mechanisms could be implemented by the EPA itself (for example, through the regulation of GHG emissions as a pollutant), or by other agencies. In that respect, the EPA has the ability to "direct any public authority to do anything within the powers of the public authority which will, in the opinion of the Authority, contribute to environment protection".[125]

As a statutory instrument developed under the POEO Act by an independent EPA, a PEP that addresses climate change and the reduction of GHG emissions (herein referred to as a **Climate Change PEP**) could set science-based, state-wide goals and standards, monitoring and reporting requirements, and assist in managing cumulative impacts and achieving long-term outcomes. It would be more effective than a non-legislative policy made by the government of the day. However, as noted above, the making of the PEP is subject to recommendation of the Minister and making by the Governor.

Key elements of PEPs, as required by legislation, and examples of how a Climate Change PEP may address each of these key elements are set out below.

4.6.2 Environment Protection Goals, Standards, Guidelines and Protocols

As outlined above, a PEP is required to specify one or more of the following— (a) an environment protection goal; (b) an environment protection standard; (c) an environment protection guideline; or (d) an environment protection protocol.

Goal

A Climate Change PEP should specify a clear overarching goal for reducing GHG emissions consistent with efforts to limit global average temperature increase to 1.5°C above pre-industrial levels.

A Climate Change PEP could then set specific goals and targets to ensure NSW is on track to meet the overarching target. This may include specific emissions reduction targets, renewable energy targets, or other targets as appropriate.

Standards

A Climate Change PEP could set specific standards for the reduction of GHG emissions to be adopted in NSW, in line with the overarching goal of reducing GHG emissions consistent with efforts to limit global average temperature rise to 1.5°C above pre-industrial levels. This could include performance standards for certain GHG sources, air quality standards or caps or limits on GHG emissions.

Standards established by the Climate Change PEP could be implemented directly by the EPA (for example, via mechanisms discussed in 4.2 - 4.4 of this report) or by other public authorities as appropriate. In addition to setting specific standards, the PEP could provide analysis and options for implementing the standards across all of Government.

Guidelines

A Climate Change PEP could include guidelines setting out how climate change considerations must be factored into decision-making in NSW for the purpose of environmental protection and achieving the goal of the PEP to reduce GHG emissions consistent with efforts to limit global average temperature rise to 1.5°C above pre-industrial levels. Given that climate change will impact different sectors, this would ensure government agencies were applying a consistent approach to addressing climate change across the state and across sectors.

Examples of guidelines or policies that the EPA could adopt as part of a Climate Change PEP include:

- Guidelines on how to assess scope 1, scope 2 and scope 3 GHG emissions in environmental impact assessment of development and infrastructure projects. This would help align environmental impact assessment for projects that require both an EPL under the POEO Act and development approval under the EP&A Act. The EPA's *Noise Policy for Industry* (2017) is an example of a policy that is intended to be used for both purposes. Additionally, the Western Australian EPA's *Environmental Factor Guideline - Greenhouse Gas Emissions* is one example of guidelines on how to undertake assessment of GHG emissions.[126]
- Guidelines on how to reduce GHG emissions across all sectors. This may include guidelines on emissions reduction technology, the use of carbon capture and storage or carbon offsetting.

While these types of guidelines and policies may ordinarily be developed by individual government agencies, the benefit of the EPA developing such policies as part of a Climate Change PEP is that it allows coordination of state-based climate change policy by a central, independent agency and ensures consistency, including that guidelines are development consistent with achieving the overarching goal of the Climate Change PEP.

A Climate Change PEP could also identify other measures that may help reduce the impacts of GHG emissions in NSW (for example, measures that could be implemented at the Federal level) and this would inform the EPA's position on those key issues, including any recommendations of the EPA on national reform.

A Climate Change PEP may also be able to inform, guide or compliment a just and equitable transition plan away from fossil fuels to cleaner forms of energy.

4.6.3 Implementation of PEP

The POEO Act provides that a PEP must be taken into consideration by:

- The EPA (or other regulatory authority as relevant) when:
  - Making a decision under Chapter 3 of the POEO on whether to issue an EPL or when making a decision under that Chapter about a licence;
  - Making a decision under Chapter 4 of the POEO Act on whether to issue an environment protection notice or when making a decision under that Chapter about such a notice;
  - Making a decision under Part 9.1 of the POEO Act on whether to grant an exemption from any specified provision or provisions of the POEO Act (e.g. in emergencies and other situations) or when making a decision under that Part about an exemption; and
  - Exercising any other licensing or regulatory environment protection function under the environment protection legislation (as defined in s 3 of the POEA Act).[127]
- In relation to certain decisions made by planning and consent authorities under the EP&A Act, including:
  - Preparing a local environmental plan or development control plan;
  - Preparing a regional environmental plan;
  - Making a local environmental plan or regional environmental plan, recommending the making of a State environmental planning policy under that Act or when giving Ministerial directions;
  - Determining a development application;
  - When considering the likely impact of an activity on the environment; and
  - When approving the carrying out of an activity.[128]
- By a public authority when exercising statutory or other functions, if the PEP or another policy requires the public authority to do so.[129]

This means that the overarching goal of the PEP to reduce GHG emissions consistent with efforts to limit global average temperature rise to 1.5°C above pre-industrial levels must be considered by decision-makers when exercising the functions outlined above.

In also means that, where relevant, any guidelines that form part of the PEP would apply to the exercise of those functions. For example, guidelines on how to assess GHG emissions in environmental impact assessment of development and infrastructure projects would be relevant to the identified functions under the EP&A Act.

5. Conclusion

The EPA must take steps to reduce GHG emissions consistent with efforts to limit global average temperature rise to 1.5°C above pre-industrial levels.

Given the significant impacts of increasing levels of GHG emissions in the atmosphere and the risks this presents for human health and the environment in NSW, the EPA must take steps to reduce GHG emissions consistent with efforts to limit global average temperature rise to 1.5°C above pre-industrial levels.

The EPA has various powers and functions that can be used to achieve this. Some mechanisms can be implemented by the EPA under the existing regulatory framework. Other mechanisms would require the EPA to recommend legislative or regulatory change in order to strengthen its powers. Importantly, the EPA has the ability to develop a draft PEP that can provide an overarching framework to address the broad and cumulative impacts of GHG emissions and climate change in NSW. It would allow overarching goals and standards to be established and identify mechanisms for achieving those goals across the whole of government.

Based on our analysis, we make the following recommendations:

Recommendation 1:

The EPA adopts an **environmental protection goal** of reducing greenhouse gas (**GHG**) emissions consistent with efforts to limit global average temperature rise to 1.5°C above pre-industrial levels.

In order to achieve this environmental protection goal, we recommend that:

Recommendation 2:

Consistent with the polluter pays principle, the EPA facilitates the reduction of GHG emissions by putting a **price on carbon**. This could be achieved by:

- Introducing schemes for economic measures (such as an emissions trading scheme) that set an appropriate price signal for reducing GHG emissions in NSW.
- The EPA immediately finalising the review of its load-based licensing (LBL) scheme and recommending that the LBL scheme be expanded to:
  - Include mining for coal and other related activities (which are currently not regulated by the LBL scheme);
  - Include carbon dioxide and methane (as well as other GHG pollutants not currently captured by the LBL scheme) as assessable pollutants (particularly for electricity generation, petroleum exploration, assessment and production, and mining for coal);
  - Increase fees to be more reflective of the costs of GHG pollution on society and drive cleaner production; and
  - Allow revenue from the LBL scheme to be used to fund GHG emissions reduction initiatives.

Recommendation 3:

The EPA adopts **other mechanisms** to reduce GHG emissions in recognition of their impacts as an environmental pollutant, including:

- The development of guidelines and policies for the reduction of GHG emissions, including standards or limits on GHG emissions;
- Placing conditions on environment protection licences (**EPLs**), including GHG limit conditions (consistent with relevant EPA guidelines or policies developed in relation to the reduction of GHG emissions);
- Implementing Pollution Reduction Programs via EPL licence conditions that require holders of EPLs to reduce GHG emissions; and/or
- The reduction of GHG emissions through emissions standards under the *Protection of the Environment Operations Act 1997* and *Protection of Environment Operations (Clean Air) Regulation 2010*.

Recommendation 4:

The EPA prepares and recommends the making of a **Protection of the Environment Policy** (**PEP**) in accordance with Chapter 2 of the *Protection of the Environment Operations Act 1997* to address the transition to a zero-emissions economy and the prevention of climate change impacts on human health and the environment of NSW.

Consistent with Recommendation 1, the PEP should contain an overarching environmental protection goal of reducing GHG emissions consistent with efforts to limit global average temperature rise to 1.5°C above pre-industrial levels.

The PEP should also:

- Identify mechanisms for the EPA to reduce GHG emissions via an appropriate regulatory scheme (consistent with Recommendation 2 and 3);
- Include guidelines for the reduction of GHG emissions across various sectors in NSW; and
- Include protocols to guide NSW government agencies to assess and respond to the impacts of climate change in decision-making.

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[65] See, for example, International Carbon Action Partnership, *Korea Emissions Trading Scheme*, September 2020, available at https://icapcarbonaction.com/en/?option=com_etsmap&task=export&format=pdf&layout=list&systems%5B%5D=47

[66] See, for example, Tokyo Metropolitan Government, Tokyo Cap-and-Trade Program, available at https://www.metro.tokyo.lg.jp/english/topics/2016/161116_01.html

[67] IPART's *NSW Greenhouse Gas Reduction Scheme Strengths, weaknesses and lessons learned* report provides a useful audit of the previous NSW GGAR and could inform the development of a new scheme in NSW.

[68] See NSW Department of Planning Industry and Environment, *Biodiversity Offsets Scheme*, September 2019, available at https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/biodiversity-offsets-scheme

[69] See Australian Government Department of Agriculture, Water and the Environment, *Carbon Faming Initiative*, July 2020, available at https://www.agriculture.gov.au/water/policy/carbon-farming-initiative

[70] State of NSW and Environment Protection Authority, *Review of the Load-based Licensing Scheme Issues* paper, October 2016, Appendix C, 2014 LBL Industry survey, op. cit. p. 66, available at https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/licensing/lbl/load-based-licensing-review-issues-paper-150397.pdf

[71] Steffen, W., Fenwick, J. and Rice, M. *Land carbon: no substitute for action on fossil fuels* Climate Council of Australia, 2016, available at https://www.climatecouncil.org.au/resources/land-carbon-report

[72] Steffen, W., Fenwick, J. and Rice, M. *Land carbon: no substitute for action on fossil fuels*, Climate Council of Australia, 2016, pp 12-15, available at https://www.climatecouncil.org.au/resources/land-carbon-report

[73] Steffen, W., Fenwick, J. and Rice, M. *Land carbon: no substitute for action on fossil fuels*, Climate Council of Australia, 2016, p 11, available at https://www.climatecouncil.org.au/resources/land-carbon-report

[74] Steffen, W., Fenwick, J. and Rice, M. *Land carbon: no substitute for action on fossil fuels*, Climate Council of Australia, 2016, p 40, available at https://www.climatecouncil.org.au/resources/land-carbon-report

[75] See Australian Government Clean Energy Regulator, *About the Emissions Reduction Fund*, 15 February 2016, available at www.cleanenergyregulator.gov.au/ERF/About-the-Emissions-Reduction-Fund

[76] See NSW Department of Planning, Industry and Environment, *NSW Climate Change Fund*, 2020, available at www.environment.nsw.gov.au/topics/climate-change/nsw-climate-change-fund

[77] State of NSW, *Net Zero Plan Stage 1 2020-2030*, March 2020, available at https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Climate-change/net-zero-plan-2020-2030-200057.pdf

[78] For example, *The Climate Council has stated that "the ERF has failed in its primary task of reducing Australia's emissions" – see Climate Council of Australia, Submission to Climate Change Authority's 2020 Review of the Emissions Reduction Fund*, June 2020, available at www.climatecouncil.org.au/wp-content/uploads/2020/06/200601-ERF-Review-clean.pdf

[79] POEO Act, Schedule 1, Part 1

[80] POEO Act, Schedule 1, Part 2

[81] POEO Act, ss 6 and 45

[82] POEO Act, ss 48 and 49. It is also an offence to carry out 'scheduled development work' (work at any premises at which scheduled activities are not carried on that is designed to enable scheduled activities to be carried on at the premises) without an EPL (POEO Act, s 47). EPLs can also be issued to control the carrying out of non-scheduled activities for the purpose of regulating water pollution resulting from any such activity – see POEO Act s 122.

[83] POEO Act, s 65

[84] State of NSW and Environment Protection Authority, *Guide to licensing Under the Protection of the Environment Operations Act 1997*, July 2016, available at https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/licensing/licensing-guide-160369.pdf

[85] POEO Act, s 64 The EPA can issue penalty notices (up to the amount of $15,000) to the occupier of a premises who fails to comply with the conditions of their licence (POEO Act, Part 8.2, Division 3, POEO Regulation, cl 80 and Schedule 6). The Courts can impose fines of up to $250,000 for an individual and up to $1,000,000 for a corporation (POEO Act, s 64).

[86] See POEO Act, s 57 and Schedule 2, cl 9

[87] Section 68 of the POEO Act provides:
68 Conditions requiring pollution studies and reduction programs
(1) The conditions of a licence may require the holder of the licence to undertake and submit to the appropriate regulatory authority studies into any aspect of the environmental impact of the activity or work authorised or controlled by the licence.
(2) The conditions of a licence may require the holder of the licence—
a) to develop and submit to the appropriate regulatory authority a pollution reduction program and to comply with the program as approved by the appropriate regulatory authority, or
b) to comply with a pollution reduction program determined by the appropriate regulatory authority.
(3) A pollution reduction program may include but is not limited to requirements to carry out works or to install plant for the purpose of preventing, controlling, abating or mitigating pollution.
(4) The appropriate regulatory authority may approve a pollution reduction program with or without alterations

[88] See State of NSW and Environment Protection Authority, *Pollution reduction programs - Operating procedure*, 2014, available at https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/epa/140733-pollution-programs.pdf

[89] The EPA's Load-based *Licensing Scheme Overview and facts about load-based licensing* provides a useful overview of the LBL scheme and is available at https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/licensing/lbl/load-based-licensing-overview-150399.pdf

[90] See, broadly, EDO NSW, *Submission on the Review of the load-based licensing scheme*, January 2017, available at https://www.epa.nsw.gov.au/licensing-and-regulation/licensing/environment-protection-licences/load-based-licensing/review-of-the-load-based-licensing-scheme

[91] Coal mining and other related activities is not a listed as a regulated activity attracting licencing fees under Schedule 1 of the *Protection of the Environment Operations (General) Regulation 2009*.

[92] See Schedule 1 of the *Protection of the Environment Operations (General) Regulation 2009*.

[93] See State of NSW and Environment Protection Authority, *Review of the load-based licensing scheme*, 2017, available at https://www.epa.nsw.gov.au/licensing-and-regulation/licensing/environment-protection-licences/load-based-licensing/review-of-the-load-based-licensing-scheme. EDO's submission to the LBL Review is available at https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/licensing/lbl/lbl-issues-paper-edo-nsw.pdf?la=en&hash=F2710EEE841A9FA08825E22C6AF266BA2FE050D6

[94] See EDO NSW, Submission on the *Review of the load-based licensing scheme*, January 2017, available at https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/licensing/lbl/lbl-issues-paper-edo-nsw.pdf?la=en&hash=F2710EEE841A9FA08825E22C6AF266BA2FE050D6

[95] State of NSW and Environment Protection Authority, *Review of the Load-based Licensing Scheme Issues paper*, October 2016, Appendix C, 2014 LBL Industry survey, p. 102, available at https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/licensing/lbl/load-based-licensing-review-issues-paper-150397.pdf

[96] This approach was taken when the LBL Scheme was originally introduced - see State of NSW and Environment Protection Authority, *Review of the Load-based Licensing Scheme Issues paper*, October 2016, p. 52, available at https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/licensing/lbl/load-based-licensing-review-issues-paper-150397.pdf

[97] The fee structure for the LBL Scheme is under consideration as part of the LBL review. Key issues in setting appropriate LBL fees relate to the role of fees in providing incentives for improved performance, matching the cost of abatement and relating directly to environmental harm. Consideration would also need to be given to the influence of LBL fees on the price of electricity, and whether the imposition of fees in NSW alone would lead to the perverse outcome of electricity generation from alternative sources (e.g. brown coal in Victoria) dominating National Energy Market.

[98] State of NSW and Environment Protection Authority, *Review of the Load-based Licensing Scheme Issues paper*, October 2016, p. 75, available at https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/licensing/lbl/load-based-licensing-review-issues-paper-150397.pdf

[99] State of NSW and Environment Protection Authority, *Review of the Load-based Licensing Scheme Issues paper*, October 2016, pp. 75 - 78, available at https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/licensing/lbl/load-based-licensing-review-issues-paper-150397.pdf, Options proposed include:
- Option 1 - Establish a grants program for emission reduction initiatives at LBL premises
- Option 2 - Fund other emission reduction activities
- Option 3 - Fund an LBL Technical Unit within the EPA and/or fund the Technical Review Panel

[100] See further, EDO NSW, *Submission on the Review of the load-based licensing scheme*, January 2017, available at https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/licensing/lbl/lbl-issues-paper-edo-nsw.pdf?la=en&hash=F2710EEE841A9FA08825E22C6AF266BA2FE050D6

[101] State of NSW and Environment Protection Authority, *Noise Policy for Industry*, October 2017, available at https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/noise/17p0524-noise-policy-for-industry.pdf While the EPA Noise Policy for Industry provides an example of how the EPA can develop guidelines to assist decision-makers to assess and manage noise pollution from certain industrial projects, EDO is of the view that the specific settings in the Noise Policy should be strengthened – see, for example, EDO NSW, *Submission on the Draft Industrial Noise Guideline*, 13 November 2015, available at https://www.edo.org.au/publication/draft-industrial-noise-guideline/

[102] See Environment Protection Authority, *Non-road diesel and marine emissions*, 2019, available at https://www.epa.nsw.gov.au/your-environment/air/non-road-diesel-marine-emissions

[103] State of NSW and Environment Protection Authority, *Diesel and Marine Emissions Management Strategy*, January 2015, available at https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/air/150038diesel-marine-strategy.pdf

[104] See Schedule 3 (Standards of concentration for scheduled premises: activities and plant used for specific purposes) and Schedule 4 (Standards of concentration for scheduled premises: general activities and plant) of the POEO (Clean Air) Regulation.

[105] Premised-based scheduled activities are listed in Schedule 1 of the POEO Act and includes 'electricity generation'.

[106] State of NSW and the Environment Protection Authority, *NSW State of the Environment 2018 – Greenhouse Gas emissions*, December 2018, available at https://www.soe.epa.nsw.gov.au/all-themes/climate-and-air/greenhouse-gas-emissions

[107] Regulations are statutory rules made under the authority of an Act of Parliament and are not required to be passed by the Parliament. However, the EPA cannot make changes to the POEO (Clean Air) Regulation in its own right; changes are proposed by the NSW Cabinet and ultimately made by the NSW Governor (POEO Act, s323).

[108] See United Stated Environmental Protection Agency, *Clean Power Plan – Carbon Pollution Standards Final Rule*, August 2015, available at https://archive.epa.gov/epa/cleanpowerplan/carbon-pollution-standards-final-rule-august-2015.html

[109] Center for Climate and Energy Solutions, *Carbon Pollution Standards for New and Existing Power Plants and Their Impact on Carbon Capture and Storage*, September 2-14, available at https://www.c2es.org/document/carbon-pollution-standards-for-new-and-existing-power-plants-and-their-impact-on-carbon-capture-and-storage/

[110] See United States Environmental Protection Agency, *NSPS for GHG Emissions from New, Modified, and Reconstructed Electric Utility Generating Units*, December 2018, available at https://www.epa.gov/stationary-sources-air-pollution/nsps-ghg-emissions-new-modified-and-reconstructed-electric-utility

[111] The United States Environmental Protection Agency's website contains limited information about the current status of the proposed changes, with most information available dated 2018, (see United States Environmental Protection Agency, *NSPS for GHG Emissions from New, Modified, and Reconstructed Electric Utility Generating Units*, December 2018, available at https://www.epa.gov/stationary-sources-air-pollution/proposal-nsps-ghg-emissions-new-modified-and-reconstructed-egus), however the EPA's Status Report in *State of North Dakota v United States Environmental Protection Agency* (DC Cir Nos 15-1381 et al), filed 24 April 2020 indicates that the proposal is yet to be finalised (made) by the EPA, (see Sabin Center for Climate Change Law, *North Dakota v EPA*, 2020, available at http://climatecasechart.com/case/north-dakota-v-epa/)

[112] State of NSW and Environment Protection Authority, *Review of the Load-based Licensing Scheme Issues paper*, October 2016, available at https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/licensing/lbl/load-based-licensing-review-issues-paper-150397.pdf

[113] The National Greenhouse and Energy Reporting (NGER) scheme is established by the *Commonwealth National Greenhouse and Energy Reporting Act 2007* (NGER Act). It establishes a single national framework for reporting and disseminating company information about greenhouse gas emissions, energy production, energy consumption and other information specified under NGER legislation. However, there have been criticisms of the NEGR scheme, including its failure to adequately measure GHG emissions for unconventional gas production in Australia - see for example, Lafleur D., Forcey T., Saddler, H. and Sandiford M. *A review of current and future methane emissions from Australian unconventional oil and gas production*, Melbourne Energy Institute, October 2016, available at http://climatecollege.unimelb.edu.au/review-current-and-future-methane-emissions-australian-unconventional-oil-and-gas-production

[114] New South Wales, Parliamentary Debates, Legislative Assembly, 13 November 1997, 1834 (Pam Allan, Minister for the Environment), available at https://www.parliament.nsw.gov.au/Hansard/Pages/HansardResult.aspx#/docid/HANSARD-1323879322-16398

[115] POEO Act, s 12

[116] POEO Act, s 11(1)

[117] POEO Act, s 11(2)

[118] POEO Act, s 11(3)

[119] POEO Act, s 11(4)

[120] POEO Act, s 13

[121] POEO Act, s 16

[122] POEO Act, ss 17 and 18

[123] POEO Act, s 20

[124] POEO Act, ss 25 and 26

[125] POEA Act, s 12

[126] See Western Australia Environmental Protection Authority, Environmental Factor Guideline - Greenhouse Gas Emissions, April 2020, available at https://www.epa.wa.gov.au/policies-guidance/environmental-factor-guideline-%E2%80%93-greenhouse-gas-emissions-0

[127] POEO Act, s 28

[128] POEO Act, s 29

[129] POEO Act, s 30

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30 June 2021

NSW Legislative Council Portfolio Committee No. 7 – Planning and Environment
NSW Parliament House
Macquarie St Sydney NSW 2000
By email: portfoliocommittee7@parliament.nsw.gov.au

Dear Committee,

Inquiry into the Protection of the Environment Operations Amendment (Clean Air) Bill 2021

Environmental Defenders Office (**EDO**) welcomes the opportunity to make a submission on the *Protection of the Environment Operations Amendment (Clean Air) Bill 2021* (**Bill**).

EDO is keenly aware of the health impacts of coal – as a consequence of both its mining and combustion - and has advised and represented many communities throughout NSW, and in particular the Hunter Valley, in relation to these impacts, amongst other things. We have written extensively on the need for effective regulation of air pollution across NSW.

The Bill seeks to amend the *Protection of the Environment Operations Act 1997* (**POEO Act**) to provide for emissions limits for a range of air impurities emitted by coal-fired power stations. Specifically, the bill seeks to improve air quality by introducing tighter standards (exceedance limits) for emissions of the air pollutants nitrogen dioxide, nitric oxide, sulfur dioxide, solid particles and mercury from coal-fired power stations. The Bill demonstrates a commitment to public health and those communities directly affected by air pollution.

EDO strongly supports tighter standards for emissions from coal-fired power stations. **Our submission identifies opportunities for strengthening emissions exceedance limits and standards in NSW to better align with best practice, requiring the use of best available techniques, and provides further recommendations on strengthening air pollution laws, including the regulation of greenhouse gases.**

Best practice? Current settings are inadequate in NSW

The regulation of air pollutants, particularly from industry, in NSW is far from best practice. Coal-fired power stations in NSW are currently permitted under their Environmental Protection Licences (**EPLs**) to emit air pollution at levels many times the maximum prescribed in other jurisdictions such as the European Union.

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The current section 128 (in Part 5.4 Air Pollution) of the POEO Act specifies that an occupier of premises must not undertake activities or operate plant that would cause point source emissions (e.g. from a chimney, stack, pipe or vent) that exceed limits set out in regulations. The provision currently does not specifically refer to coal-fired power stations, nor specific standards for air impurities. Nor do the regulations set out, for the purposes of section 128, specified limits for air impurities emitted from coal-fired power stations.

It should be noted, however, that the emission of certain pollutants from coal-fired power stations — including those set out in the Bill— is included in the load-based licensing (**LBL**) scheme under the *Protection of the Environment Operations (General) Regulation 2009*. The LBL scheme requires emitters to pay a fee for the total amount of each pollutant they emit, but does not place a limit (cumulative or point-in-time) on those emissions. However, we note the LBL review is still not finalised (see recommendations below).

The Bill seeks to amend section 128 by providing specific limits in relation to specified air impurities emitted by coal-fired power stations. The proposed amendment would therefore be a step in the right direction to improve air quality in NSW, by clarifying specific standards for coal-fired power stations — some of the largest sources of air pollution in the state.[1]

For the air impurities identified in the Bill, the proposed emissions limits still exceed those set in comparable jurisdictions such as the European Union, but are much closer to this standard than any NSW power station is currently required to meet under its EPL. For example, the limits currently in place for the Eraring power station (Australia's largest coal-fired power station) under its EPL (**EPL 1429**) are set out below, compared to those proposed by the Bill and those of the EU.

	Bill	**EU[2]**	**EPL 1429[3]**
Nitrogen oxides (NO_X)	200 mg/m^3 (total, as NO_2 equivalent)	65-150 mg/m^3 (yearly average) < 85 – 165 mg/m^3 (daily average)	1100 mg/m^3
Sulfur dioxide (SO_2)	200 mg/m^3	10-130 mg/m^3 (yearly average) 25-165 mg/m^3 (daily average)	1700 mg/m^3
Solid particles	20 mg/m^3 (total)	2-10 mg/m^3 (yearly average) 3-11 mg/m^3 (daily average)	50 mg/m^3

[1] NSW Government (2021) *NSW Clean Air Strategy 2021*-30, available at https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Air/nsw-clean-air-strategy-2021-30-draft-for-consultation-210080.pdf, pp 12-14.

[2] See Commission Implementing Decision (EU) 2017/1442 of 31 July 2017 establishing best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for large combustion plants, available at https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017D1442.

[3] Available at https://app.epa.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=192607&SYSUID=1&LICID=1429.

Mercury	1.5 µg/m^3	<1-4µg/m^3	50 µg/m^3

The proposed limits therefore represent a significant improvement on current standards, and would have the additional authority of being set out in the legislation rather than by regulation. However, EDO would also support a mechanism to allow limits to be further reduced in future, with the aim to align with best practice limits.

Best available techniques

In order to ensure that the emissions of all pollutants are kept as low as practicable, the Committee should also consider recommending that the POEO Act be amended to require that industrial emitters use **best available techniques** (or **BAT**, a standard set for the regulation of air pollution from industrial installations by bodies such as the OECD[4] and EU[5]) to manage the emission of pollutants from industrial facilities to air, land, and water.

BAT means the most effective and advanced pollution control methods available for the polluting activity in question. Although the concept is technology-based, requiring the implementation of a particular technology or combination of technologies, directives and guidance documents setting out what constitutes BAT for a particular industrial activity and pollutant will also set out the range of pollution concentration levels that can be achieved with BAT.

For example, the European Commission considers that BAT for NO_x emissions from coal-fired power stations is to use one or a combination of the following to achieve an emissions level for a large, existing coal-fired power plant, of a yearly average of 65-150 mg/m^3 or a daily average of < 85–165 mg/m^3:[6]

- Combustion optimisation;
- Primary techniques such as air staging, fuel staging, flue-gas recirculation, or low NO_x burners;
- Selective non-catalytic reduction;
- Selective catalytic reduction; or
- Combined techniques for NO_X and SO_X reduction.

Improving regulation of greenhouse gases

The Bill does not include a proposed limit or standard for all greenhouse gases produced by the combustion of coal for electricity, particularly the production of carbon dioxide, despite this causing significant air impurity which has a material impact on public health.

[4] OECD (2020) *Best Available Techniques (BAT) to Prevent and Control Industrial Pollution*, available at https://www.oecd.org/chemicalsafety/risk-management/best-available-techniques.htm .
[5] At n 2 above.
[6] Ibid

Greenhouse gases such as carbon dioxide are air impurities for the purposes of the POEO Act, which provides that:

> ***air impurity*** includes smoke, dust (including fly ash), cinders, solid particles of any kind, gases, fumes, mists, odours and radioactive substances.

Air pollution is defined as "the emission into the air of any air impurity". That is, for the purposes of the POEO Act as it stands, carbon dioxide (a gas) is an air impurity, and when emitted to the air by coal fired power stations or any other point source, is air pollution. Climate change, which is caused in large part by the combustion of fossil fuels (such as coal) for electricity and the emission of greenhouse gases, will have an increasing impact on public health in the future.

To that end, **we strongly recommend regulating carbon dioxide and other greenhouse gas emissions as air pollutants**.

In November 2020 we released a policy paper exploring opportunities for the EPA to regulate greenhouse gas emissions in NSW: ***Empowering the EPA to prevent climate pollution***.[7] We refer the Committee to the recommendations in that report:

> ***Recommendation 1:*** The EPA adopts an environmental protection goal of reducing greenhouse gas (**GHG**) emissions consistent with limiting global average temperature rise to 1.5°C above pre-industrial levels.
>
> ***Recommendation 2:*** Consistent with the polluter pays principle, the EPA facilitates the reduction of GHG emissions by putting a price on carbon. This could be achieved by:
>
> a) Introducing schemes for economic measures (such as an emissions trading scheme) that set an appropriate price signal for reducing GHG emissions in NSW.
> b) The EPA immediately finalising the review of its **load-based licensing (LBL) scheme** and recommending that the LBL scheme be expanded to:
>
> - Include mining for coal and other related activities (which are currently not regulated by the LBL scheme);
> - Include carbon dioxide and methane (as well as other GHG pollutants not currently captured by the LBL scheme) as assessable pollutants (particularly for electricity generation, petroleum exploration, assessment and production, and mining for coal);
> - Increase fees to be more reflective of the costs of GHG pollution on society and drive cleaner production; and
> - Allow revenue from the LBL scheme to be used to fund GHG emissions reduction initiatives.
>
> ***Recommendation 3:*** The EPA adopts other mechanisms to reduce GHG emissions in recognition of their impacts as an environmental pollutant including:
>
> - The development of guidelines and policies for the reduction of GHG emissions, including standards or limits on GHG emissions;

[7] Available at: https://www.edo.org.au/2020/11/26/empowering-the-nsw-epa-to-prevent-climate-pollution/.

- Placing conditions on environment protection licences (**EPLs**), including GHG limit conditions (consistent with relevant EPA guidelines or policies developed in relation to the reduction of GHG emissions);
- Implementing Pollution Reduction Programs via EPL licence conditions that require holders of EPLs to reduce GHG emissions; and/or
- The reduction of GHG emissions through emissions standards under the *Protection of the Environment Operations Act 1997* and *Protection of Environment Operations (Clean Air) Regulation 2010*.

Recommendation 4: The EPA prepares and recommends the making of a Protection of the Environment Policy (**PEP**) in accordance with Chapter 2 of the *Protection of the Environment Operations Act 1997* to address the transition to a zero-emissions economy and the prevention of climate change impacts on human health and the environment of NSW.

We note that, as is apparent from the recommendations above, the NSW EPA has an array of existing powers that could be utilised to regulate greenhouse gas emissions – these measures could be taken without the need for legislative amendment. We extract the following as an example:

Key mechanism	Options	Key provisions and features	Enforcement mechanism
Pollution and waste standards and limits	Non-statutory limits (guidelines etc.)	• Guidelines and policies for the regulation pollution or waste can provide standards or limits (e.g. EPA *Noise Policy for Industry* (2017)). • The EPA could develop a guideline or policy that outlines how GHG emissions can be assessed and regulated by certain industries, and set standards for decision-makers to consider in assessing and determining EPL applications and issuing licence conditions under the POEO Act.	• Standards set out in guidelines may be implemented via conditions on EPLs. • Failure to comply with a condition of an EPL is an offence under section 64 of the POEO Act.
	Statutory limits	• Part 5.4 of the POEO Act and the POEO (Clean Air) Regulation currently regulate air pollution (e.g. emissions from wood heaters, fires, motor vehicles and fuels and industry) by prescribing standards or limits in the regulation, or directly prohibiting certain activities. • The scope of the POEO Act and POEO (Clean Air) Regulation could be expanded to include the regulation of GHG emissions.	• The POEO Act contains various offence provisions for exceeding standards of concentration or rate (e.g. s128 - Standards of air impurities not to be exceeded).

However, as analysed in the EDO report, these existing legislative tools have not been used effectively. For this reason, this Bill provides an opportunity to establish enforceable standards for all greenhouse gases including carbon dioxide, that would galvanise necessary emissions reductions.

Placing limits on the emission of carbon dioxide from coal-fired power stations - either through amending legislation or regulations - is a practicable step that can be taken to commence addressing the harm caused by the emission of carbon dioxide and other greenhouse gases.

Imposing limits on the greenhouse gas emissions of power plants is not novel. For instance, standards for fossil fuel power plants were introduced by the Obama administration in the United States of America. In 2015 the United States Environmental Protection Agency set performance standards under the *Clean Air Act 1977* for new fossil fuel power plants. The *Standards of Performance for Greenhouse Gas Emissions from New, Modified, and Reconstructed Electricity Generating Units* set limits — in the form of the maximum allowable carbon dioxide emissions per unit of electricity — on greenhouse gas emissions from power plants.[8] New gas-fired power plants could emit no more than 1000lb CO_2e/MWh, and new coal-fired power plants no more than 1400lb CO_2e/MWh.

Climate change has, and will increasingly have, a significant impact on air quality and public health. This was made starkly apparent by the Black Summer bushfires. Measures to address air quality should be coordinated with measures to address climate change, through mitigation as well as management. We refer to EDO reports including recommendations to maximise co-benefits across pollution policy, climate change and the NSW planning system.[9]

We would be happy to discuss the above in more detail. For further information, please contact rachel.walmsley@edo.org.au or (02) 9262 6989.

Yours sincerely,
Environmental Defenders Office

Rachel Walmsley
Head of Policy & Law Reform

Attachment: Empowering the NSW EPA to Prevent Climate Pollution - Environmental Defenders Office (edo.org.au)

[8] United States Environmental Protection Agency (2021) *NSPS for GHG Emissions from New, Modified, and Reconstructed Electric Utility Generating Units*, available at https://www.epa.gov/stationary-sources-air-pollution/nsps-ghg-emissions-new-modified-and-reconstructed-electric-utility.

[9] EDO (2019) *Climate-ready planning laws for NSW: Rocky Hill and beyond,* available at https://www.edo.org.au/publication/climate-ready-planning-laws/; EDO (2020) *Empowering the NSW EPA to Prevent Climate Pollution*, available at https://www.edo.org.au/2020/11/26/empowering-the-nsw-epa-to-prevent-climate-pollution/.

Submission on the *Clean Air for NSW* Consultation Paper

prepared by

EDO NSW
January 2017

About EDO NSW

EDO NSW is a community legal centre specialising in public interest environmental law. We help people who want to protect the environment through law. Our reputation is built on:

Successful environmental outcomes using the law. With over 25 years' experience in environmental law, EDO NSW has a proven track record in achieving positive environmental outcomes for the community.

Broad environmental expertise. EDO NSW is the acknowledged expert when it comes to the law and how it applies to the environment. We help the community to solve environmental issues by providing legal and scientific advice, community legal education and proposals for better laws.

Independent and accessible services. As a non-government and not-for-profit legal centre, our services are provided without fear or favour. Anyone can contact us to get free initial legal advice about an environmental problem, with many of our services targeted at rural and regional communities.

EDO NSW is part of a national network of centres that help to protect the environment through law in their states.

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Introduction

EDO NSW welcomes the opportunity comment on the Consultation Paper for Clean Air for NSW (**Consultation Paper**). EDO NSW is a community legal centre specialising in public interest environmental law. Through our legal advice, law reform and community legal education services, we have provided legal advice on a range of issues relating to air quality in NSW for over 30 years.

We have written extensively on the need for improved pollution management, including air pollution management, in NSW. We therefore welcome the NSW Government commitment to clean air in NSW and the acknowledgment in the Consultation Paper (p 6) that:

> *Everyone who is born, lives, plays, learns, works, travels, makes their home, does business, or grows old in NSW deserves to breathe clean air.*

The final Clean Air policy and its overarching goal should emphasise this positive statement, with its focus on equitable outcomes, and reference the need for continuous improvement. Achieving such a goal requires more specific measures of success than a single, average state-wide metric, which may disguise local or regional disparities.

We welcome the recognition in the Consultation Paper that achieving Clean Air for NSW requires a whole of government approach, working in partnership with industry and the community. We strongly support the position (p 18) that:

> *Continuing and increasing measures that are positive for air quality, such as expansion of public transport systems, take-up of cleaner energy and technologies and planning that reduces air emissions from and impacts on communities, are also essential to future clean air in NSW*.

In our 2012 Discussion Paper - *Clearing the air: Opportunities for improved regulation of pollution in New South Wales*[1] (**Discussion Paper**) - we proposed an approach that:

- places duties on regulators and polluters to minimise and, where possible, eliminate pollutants from entering our environment;
- sets pollution management on an objective, scientifically-based foundation;
- strengthens the role of the EPA in strategic planning and decision making;
- strengthens the pollution licencing system and increases transparency around information relating to polluting activities;
- enhances and broadens the use of existing tools to minimise pollution loads and drive continual improvement;
- strengthens community engagement in pollution management decisions; and
- enhances the EPA's role as an independent regulator.

[1] Environmental Defender's Office (2012) *Clearing the air: Opportunities for improved regulation of pollution in New South Wales*, Environmental Defender's Office (NSW) Ltd, Sydney, Australia, available at: http://d3n8a8pro7vhmx.cloudfront.net/edonsw/pages/280/attachments/original/1380668034/120322pollution_discussion_paper.pdf?1380668034

These recommendations remain highly relevant to the Clean Air consultation.

Since then we have made a number of other relevant submissions noted here for your reference:

- the *National Clean Air Agreement* (EDOs of Australia (**EDOA**), 2015),[2]
- *Senate Inquiry on the Motor Vehicle Standards (Cheaper Transport) Bill 2014* (EDOA, 2015);[3]
- *Senate Inquiry into the retirement of coal fired power plants* (EDOA, 2016);[4]
- the *NSW Climate Change Fund – Draft Strategic Plan* (2016);[5] and
- most recently, the *Review of the NSW Load-based Licensing scheme* (2016).[6]

Part One of this submission makes comment on three key issues:

A. Actions and timeframes,
B. Integrating air quality into planning decisions, and
C. Monitoring and measuring air pollution.

Part Two of this submission responds to the Consultation Paper's *Priorities to reduce emissions and exposure*. Specific 'Goals' and 'Key Points' in the Paper are discussed in **Tables 1 and 2** below.

Part One – Three key issues

A. Actions and timeframes

While some actions within the Consultation Paper will contribute to delivering a system as proposed in our Discussion Paper, the current list of actions focuses heavily on further investigation of air quality matters at the apparent expense of detailed commitments to or timelines for action. This highly problematic for a 10 year plan.

Basing pollution management on an objective, scientifically based foundation is vital, however it should not prevent immediate and ongoing action to address known pollution issues. The Consultation Paper highlights numerous international examples of successful measures to address priority pollutants but the associated actions often simply specify more research.

The Consultation Plan should include SMARTER[7] targets for each priority area. This includes making shorter-term timeframes for clear regulatory action. It also means

[2] EDOA *Submission on the National Clean Air Agreement* April 2015, available at: http://www.edonsw.org.au/pollution_policy. **Download PDF**
[3] EDOA *Submission on Motor Vehicle Standards (Cheaper Transport) Bill 2014 Inquiry*, 2 October 2015, available at: http://www.edonsw.org.au/climate_change_energy_policy. **Download PDF**.
[4] Available at: http://www.edonsw.org.au/climate_change_energy_policy. **Download PDF**.
[5] Available at: http://www.edonsw.org.au/climate_change_energy_policy. **Download PDF**
[6] Available at: http://www.edonsw.org.au/pollution_policy.
[7] Specific, Measurable, Achievable, Relevant, Timely, Evaluate, Re-evaluate. Examples of such targets within the NSW Government include the 30 State Priorities and 12 Premier's Priorities (*NSW Making it Happen*, 2015).

developing specific, timely actions for high-pollution sectors and activities – such as coal mines, wood smoke, road transport, and off-road engines.

B. Integrating air quality into planning decisions

We agree that to deliver clean air for NSW it is necessary to implement clean air policies and practices through strategic land use policies and planning instruments (p 44). There is little evidence of such an approach to date and it is unclear how this will work for regional and district plans, SEPP reviews or imminent major developments. For example, one of the major planning and development processes currently underway in the Sydney region – the development of a new airport and associated city in Western Sydney – is in a known pollution hotspot. This is a direct contradiction to the principle of embedding clean air considerations in upfront planning processes.

The proposed response to this contradiction is apparently to develop a community air quality monitoring project (p 51). While this may be useful to demonstrate the scale of the problem, it will do nothing to address the actual sources and impacts of air pollution. Nor will the problem be adequately addressed through local community initiatives such as 'managing individual exposure'. This is a clear instance where the planning system is failing to deliver clean air for the people of NSW. Similarly, suggesting that building new roads will improve air pollution due to the amount of time individual cars spend in traffic (p 45) is contrary to extensive research demonstrating that the construction of new roads leads to increased vehicle usage.

Cumulative impacts

Decisions at each stage of strategic planning, development assessment and pollution control should be integrated to manage the cumulative impacts of existing and emerging pollution sources in a strategic manner.[8] Decision-makers should be required to take into account a plan or project's cumulative impacts in any decision on whether to approve it, and must reject the plan or project if these impacts will degrade the receiving environment (for example, the airshed). Strengthening the EPA's role in developing solutions to regional pollution hotspots could support this, through tools such as Protection of the Environment Policies, which have not been used to date.[9]

At the next level of management, licensing of polluting facilities should be based on objective standards that maintain environmental health, rather than procedural requirements that do not consider the receiving environment. This is consistent with the legal objectives of the EPA.[10] Additional considerations, such as whether the licence holder is a fit and proper person, and long-term impacts of the proposed facility, should also be considered.

[8] EDO NSW has produced an extensive body of recommendations for NSW planning law reforms - these can be found at: http://www.edonsw.org.au/planning_development_heritage_policy. We also work directly with the Department of Planning and Environment on initiatives such as improving environmental impacts assessment including for example, improved Health Impact Assessment for major projects.
[9] *Protection of the Environment Operations Act 1997* (NSW), Chapter 2, Protection of the Environment Policies.
[10] *Protection of the Environment Administration Act 1991*, s. 6.

Good policy is supported by better laws

For the benefits of up-front strategic planning to be realised, there is a need for amendments of relevant planning and pollution legislation, regulation and policy as a matter of urgency. Others Consultation Paper initiatives involve innovative uses of existing tools.

Regarding the potential linkages between clean air measures and the preparation of district plans for the Greater Sydney area, we refer to the 2016 *Environment Panel Advisory Paper* we collaborated on with the Greater Sydney Commission, Total Environment Centre and others – Part 3.8 Air quality.[11]

Regarding co-benefits between air quality and greenhouse gas emissions (Consultation Paper p 40), in 2016 we released a report on *Planning for climate change: How the NSW planning system can better tackle greenhouse gas emissions.* Many of its 14 recommendations are relevant to achieving co-benefits across pollution policy, climate change and planning systems.[12]

C. Monitoring and measuring air pollution

We welcome the Consultation Paper's commitment to measuring air pollution in a way that allows ongoing assessment of the success in reducing pollutants. However, we are concerned that the population weighting of the proposed Clean Air Metric (**CAM**) will not promote equal access to clean air.

Goals and targets must embed equitable considerations

Intragenerational equity is a principle of ecologically sustainable development (**ESD**):

> *It involves people within the present generation having equal rights to benefit from the exploitation of resources and from the enjoyment of a clean and healthy environment.*[13]

ESD, in turn, is a guiding tenet of NSW pollution legislation and the EPA's functions.

While we acknowledge that "evidence tells us that the greatest public health gains will come from reducing long-term exposure of large populations to air pollution" (Consultation Paper p 8), people living outside large populations have an equal right to clean air. An attempt to measure average air quality should not replace the need to understand where individuals and local communities are suffering from pollution hotspots, and to aim for continuous improvement.

Goals, targets and measures of success must reflect this more equitable approach.

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[11] *Environment Panel Advisory Paper for the Greater Sydney Commission,* November 2016, Available at: https://d3n8a8pro7vhmx.cloudfront.net/boomerangalliance/pages/514/attachments/original/1481601304/TE024_EnviroPaper_151116-final.pdf?1481601304.

[12] For example, see recommendations 12 and 14. Available at: http://www.edonsw.org.au/planning_for_climate_change

[13] The Hon B.J. Preston, citing Prof. B. Boer (1995), in *Ecologically Sustainable Development in the Courts in Australia and Asia*, presentation to a seminar on environmental law, Wellington NZ, 28 August 2006.

Similarly, measuring air quality using rolling 3-year averages (p 14) has the potential to hide new or emerging pollution issues. Rather than use 3-year rolling averages to measure trends, it would be more appropriate to manually remove the impacts from exceptional (natural) events, such as bushfires and dust storms. What constitutes such an exceptional event should be clearly defined to ensure consistency in annual data.

We also note the recommendation in the NSW Chief Scientist's report on the NSW Coal Chain[14] that:

> *NSW needs to adopt a two-pronged approach to air quality monitoring. One prong would maintain the State's current focus on background ambient air quality by way of its well-structured network of NEPM monitors. The second prong would be a more systematic focus on spatial and temporal distribution of air pollutants associated with pollutant-generating sources extending the approach of local monitoring required of some licensed industry activities; and broadening this to other locations and pollution sources which may or may not be subject to licenses.*

The Clean Air policy should demonstrate how it will adopt a more systematic focus on key sources and pollution hotspots, with sector-specific actions and timeframes.

Part Two of this submission continues below.

[14] NSW Chief Scientist & Engineer *Final Report on the Independent Review of Rail Coal Dust Emissions Management Practices in the NSW Coal Chain* August 2016

Part Two - Priorities to reduce emissions and exposure

We make the following comments in relation to:

- proposed Goals specified in the Consultation Paper (**Table 1**); and
- Key Points raised in the subsequent discussion – on Shared responsibility, Empowering and engaging stakeholders, Strengthening knowledge, and Evaluating and improving air quality management (**Table 2**).

Table 1: Response to proposed Consultation Paper Goals

Proposed Goal	**EDO NSW Comment**
*Strengthen and better target the EPA's load-based licensing (**LBL**) scheme to extend and improve its effectiveness as a tool in managing air quality*	EDO NSW supports strengthening of the LBL scheme. We recently made a submission to the review of the LBL system. We refer the Air Policy Unit to that submission.[15]
Minimise emissions from power stations to reduce primary and secondary particle precursors	We support this goal but also strongly recommend regulating carbon and other greenhouse emissions as air pollutants. The status of the actions associated with the goal is unclear, as the Consultation Paper states that an initial report was due to be presented to Coal Innovation in late 2016. The Consultation Paper identifies that "*the United States, Europe and China have successfully introduced standards for power station SO_2 and NOx emissions, based on currently available technology*". The final paper should include a requirement for the immediate implementation of best practice standards to reduce harmful emissions from power stations.
The NSW Government will strengthen the rigour of the rehabilitation framework for mining projects to ensure that outcomes better meet the expectations of government and the community	We strongly support this goal but the effectiveness of such a strategy under Clean Air for NSW is questionable given the action identified is that the NSW Government "could" develop a strategy. Any strategy to address the significant legacy issues associated with mine rehabilitation should be more holistic than simply improving air quality.

[15] EDO NSW *Submission on the Review of the load-based licensing scheme*, January 2017, available at: http://www.edonsw.org.au/pollution_policy.

	In relation to mining, the final paper should include a greater focus on reducing operational emissions and limiting methane emissions from mining. The *State of the Environment 2015*[16] notes that 10% of NSW greenhouse gas emissions are fugitive emissions from coal mines.
Minimise exposure to dust emissions in the Hunter rail corridor	This is a clear example of a goal that is lacking SMARTER targets. There is extensive overseas research showing ways to minimise dust exposure from rail lines. This goal should also be broadened to include particulate matter (PM), particularly as it relate to diesel emissions from locomotives. (See also, our *Draft Amendment to Protection of the Environment Operations Regulation (Scheduled Activities) 2016 - rail freight - EDO NSW submission*, June 2016).[17]
Examine policies and incentives that could be adopted by the NSW Government to increase the uptake of electric vehicles	We welcome policies and incentives to increase uptake of electric vehicles but it is equally important to ensure that these vehicles will be recharged by renewable energy. We support the Government identifying links for renewable energy and planning for electric car infrastructure (Consultation Paper p31).
Investigate a mandatory emission performance standards policy for motor vehicles operated by or under NSW Government service contracts	Australia has one of the oldest, and therefore highest emitting car fleets, in the developed world. Given the existing availability of vehicles meeting European standards, there should be an immediate required for Government purchases to conform with EU6/VI and a staged introduction for all vehicles in NSW and Australia. To encourage rapid take up of lower emissions vehicles, new measures such as pricing vehicle registration based on the scale of carbon and other emissions should be considered.[18]

[16] EPA, *NSW State of the Environment 2015*, 'Greenhouse gas emissions', p 38.
[17] Available at: http://www.edonsw.org.au/pollution_policy
[18] See also our: EDOs of Australia submission on Motor Vehicle Standards (Cheaper Transport) Bill 2014 Inquiry, 2 October 2015, available at: http://www.edonsw.org.au/climate_change_energy_policy.

Further reduce diesel emissions from priority sources	The final paper must specify the areas of diesel emissions to be targeted and present timelines for action. The existing *Diesel and Marine Emissions Management Strategy* (**DME Strategy**) is already behind target so greater investment will be needed to ensure that timelines are met. In addition to the actions proposed in the DME Strategy Environmental Protection Licences of major industrial users such as construction, mining, agricultural industries etc. should include: • particle filters fitted on all non-road equipment; • requirements for purchase of any diesel off road equipment to meet the latest emission standards available; and • use of low sulphur diesel for major non-road diesel equipment.
Reduce health impacts from air toxic emissions in petrol vapours, by extending vapour recovery requirements for new/upgraded petrol service stations and petrol depots to regional urban centres	Given the known health risks associated with the release of petrol vapours, the final paper should specify timeframes for implementing petrol bowser vapour recovery across NSW. This strategy should be supported by improved fuel standards.[19]
Reduce exposure to fine particle pollution from domestic wood heaters	We support stronger regulation of new heaters but recommend additional focus on improving management of existing heaters, including mandatory wood heater servicing and testing for emissions compliance.
Reduce emissions from garden equipment and fuel storage containers, and support uptake of national actions to improve emissions standards for new garden equipment	The final paper should include an action to implement stronger standards for garden equipment and fuel tanks in NSW, in addition to promoting these standards at a national level.

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Improved health outcomes and reduction in all health impacts of smoke across populations by reducing exposure to particle pollution from hazard reduction and open burning in metropolitan and regional NSW	This work should also be linked to programs such as the Hotspots Fire Project,[20] which is designed to increase community understanding of the role of fire in the Australian bush and to improve the management of fire across the landscape for ecological outcomes, while also protecting life and property.
Ensure NSW air quality monitoring networks meet government and community information needs	We support a review and expansion of the NSW Government air quality monitoring network, but recommend this be done concurrently with a review of, and enhanced reporting requirements for, industry monitoring. Many EDO NSW clients have been frustrated by their inability to access air quality monitoring data that directly affects them – despite EPA licencing requirements to undertake such monitoring. Industry should be required to make all data collected publicly available and these monitoring points should be considered in assessing the comprehensiveness of the existing network.[21] There should also be trial measurements for ultrafine particulate matter (PM_1)
Expand the scope and enhance the accuracy of air quality forecasting capabilities in NSW	Enhanced forecasting should be supported by real-time reporting of existing air quality monitoring data.
Provide the best available information on air pollution and possible health impacts from major incidents, to inform emergency management responses and to reduce health impacts in communities affected by major incidents	This information should be assessed regularly so that the source of major health incidents can be addressed, but also so that any underlying patterns can be identified and analysed to minimise future recurrence of incidents where possible.
Promote more productive use of energy in the transport sector which could also lead to local air quality benefits, via for example: • *cleaner vehicles, such as electric and hybrid vehicles* • *reduced road congestion* • *increased use of public and active transport.*	We strongly support improved energy efficiency and greater recognition of greenhouse gas pollutants generated in the transport sector. This should include Commonwealth and state consideration (under the National Clean Air Agreement) to phase-out and redirect existing subsidies such as the Fuel Tax Credits Scheme to the mining sector. The scheme reduces the cost of diesel and exacerbates pollution and GHG emissions.

[20] See: http://hotspotsfireproject.org.au/
[21] See EDO NSW, *Submission on draft guidelines for the publication of monitoring data under the Protection of the Environment Operations Act 1997* (2012), Download PDF.

Table 2: Response to proposed Key Points in Consultation Paper

Key Point	EDO NSW Comment
***Shared responsibility**, p 41*	
Establish an Interagency Taskforce on Air Quality in NSW to deliver and oversee the implementation of Clean Air for NSW.	It is vital the members of the Taskforce have sufficient delegation authority to ensure that the necessary policy positions and activities are enacted in a timely and effective manner.
Collaborate across NSW agencies to: • *Support improved knowledge, communication and consultation on air quality management in NSW* • *Promote actions to directly improve air quality in NSW* • *Maximise air quality benefits and mitigate or prevent adverse air outcomes from decisions that can impact on air, such as decisions on land-use and transport planning and climate change and energy policy* • *Maximise potential co-benefits from clean air efforts, such as reduced greenhouse gas emissions and improved energy efficiency.*	We strongly support greater collaboration across NSW agencies to reduce air pollution. Specific actions for improvement in NSW should include: • measurable limits must be set on the cumulative amounts of pollution allowable at a State, catchment and site level (for example, via EPA Protection of the Environment Policies); • review of planning approval regimes to incorporate measure such as buffer zones between certain facilities and residential areas; • integrating Health Impact Assessment into state development assessment laws. This should include comprehensive mandatory assessment of cumulative impacts of multiple projects in an area; • site specific 'Best Practice Management' assessment should be adopted as part of the EIA process; • developing a framework to implement 'continual improvement' and 'best available technology' in all industries, including ensuring that the five-yearly review of pollution licences includes a commitment to implementing these principles; and • reviewing and implementing the recommendations of the EDO NSW *Planning for Climate Change* report (2016).[22]

[22] Available at: http://www.edonsw.org.au/planning_for_climate_change.

Work with the Commonwealth and across jurisdictions to champion national initiatives to improve air quality and public health in NSW and Australia-wide.	The EDOA *Submission on the National Clean Air Agreement*,[23] recommended that any National Clean Air Agreement should: • reduce systemic delays in improving air quality standards; • adopt continual improvement and best available technology frameworks to support the goal of 'sustained reduction in air pollution and exposure'; • apply positive obligations to protect the environment as per the United States of America *Clean Air Act*; • make decisions in accordance with ecologically sustainable development; • adopt and enable 'next generation' air quality monitoring technology, • real-time publication and online access to air quality monitor information; and • manage ambient air pollution holistically with greenhouse reduction targets.
Support local government and community actions to improve air quality at a local and regional level.	EDO NSW consistently receives calls from community members who are unable to negotiate the separation of responsibilities between state and local government, or who reach the 'end of the line' when a council is unable or unwilling to take action. EPA should take a more proactive role in assisting community members to progress issues of concern regarding air pollution.
***Empowering and engaging stakeholders**, p 49*	
Hold a NSW Clean Air Summit for government, stakeholders and the community to review air quality issues and set the basis for future engagement.	We support this initiative and would be happy to provide constructive input based on our legal expertise in advising individuals and communities affected by air quality issues.
Set in place a Clean Air stakeholder and community engagement plan that provides for: • *integration of engagement in all NSW clean air policy/actions* • *early engagement, communication of engagement outcomes,*	Adequately supporting community engagement will require improved access to information. Air quality data should be publicly available in real time with comprehensive summaries and analysis prepared regularly.

[23] EDOA *Submission on the National Clean Air Agreement* April 2015, available at: http://www.edonsw.org.au/pollution_policy. **Download PDF**

enhancement and expansion of engagement tools, and commitment to best practice engagement approaches.	
***Strengthening knowledge**, p 53*	
Maintain and enhance key knowledge tools for air quality management and communication with stakeholders: • *Review the NSW air quality monitoring network, to ensure it meets air quality management and community information needs across NSW* • *Release a comprehensive NSW Air Quality Report for the Clean Air Summit* • *Finalise and release updated air emissions inventory data, projections and analysis for the Clean Air Summit.*	See our comments regarding improved access to data above.
Complete the Sydney Air Quality Study to support air quality management for major new areas of growth and the Sydney region as a whole.	We support this with a clear timeframe.
Continue to develop a comprehensive, robust, current and relevant body of research to inform air quality management in NSW and meet stakeholder needs, through the OEH/EPA Pollution Knowledge Strategy and specific air science, health and economic studies.	We support ongoing research but as has been stated elsewhere, this shouldn't delay action on pollutants when best practice measures are available and proven.
***Evaluating and improving air quality management**, p 58*	
Set in place an integrated monitoring, evaluation and reporting system for Clean Air for NSW initiatives that includes: • *A population-weighted air quality metric for measuring progress towards the goal of improving average air quality across NSW* • *Integration of evaluation into the development of all initiatives under Clean Air for NSW* • *Annual reporting requirements for Clean Air goals and actions* • *Development of a dedicated Clean Air for NSW webpage, where all relevant reports and links are available.*	Effective evaluation of the final strategy will require SMARTER targets that can be objectively assessed. Equitable and sophisticated metrics are needed, beyond a statewide average air quality metric, to ensure that air quality is continuously improving for everyone in NSW (see for example the Minister's Foreword to Consultation Paper, p 6).