

Chapter 4

Coal

Sources of coal emissions

4.1 Coal is a potential source of dust and particulates throughout its lifecycle as a fuel. Coal is likely to be a source of significant air pollution if not properly managed during extraction, storage, and transport. It is also a source of significant CO₂ emissions during burning. Evidence provided from the NSW EPA indicated the contribution of coal mining to emission levels in that State broadly, with mining for coal accounting to 27.6 per cent of PM_{2.5} in the greater metropolitan region of Wollongong, Sydney and Newcastle (GMR), 58.4 per cent of PM₁₀ in the GMR. In the Upper Hunter region (UHR), those levels are higher, at 66 per cent of PM_{2.5} and 87.6 per cent of PM₁₀ emissions.¹

4.2 The Minerals Council of Australia (MCA) recognised that coal mining is a source of air pollution, but emphasised the importance of the different size of particles and their respective impacts:

Without a doubt, the industry by its very nature makes a contribution to particulate emissions. It digs, it has haul roads, it transports material. But as part of that, and this is where the context comes in, you need to look at the composition, the size and the very nature of those particles. For example, if it is a rock it is not going to go very far. If it is dust, depending on prevailing weather conditions, it will go a certain distance but then it will drop out—especially if it is coarser particles. If it is ultrafine particles, they are not sourced from mechanical digging. They are not sourced from haul roads. They are sourced primarily from combustion sources....Without a doubt, we recognise that the industry, by its very nature, contributes to particle emissions.²

4.3 Coal dust and other particulates are produced during the extraction process of coal, when diesel is burned operating mining machinery, 'blasting' sends dust and other substances into the air, and draglines and trucks create or re-mobilise dust.³

4.4 While coal is waiting to be loaded onto trains or boats, it is stored in large mounds referred to as stockpiles. The committee heard that these stockpiles are a potential source of coal dust. Community groups in particular expressed concerns about the size of the stockpiles. It was reported to the committee that the proposed

1 NSW Environmental Protection Agency, *Submission 80*, pp. 10–11.

2 Mr McCombe, Assistant Director – Environmental Policy, Minerals Council of Australia, *Committee Hansard*, 16 April 2013, p. 23.

3 Mr Krey, Member, Hunter Valley Protection Alliance, *Committee Hansard*, 16 April 2013, p. 12.

stockpile at the Dudgeon Point coal terminal in Mackay would cover 400 hectares; and be located two kilometres from residential areas.⁴

4.5 The potential for coal trains to cause dust emissions was a key issue throughout the committee's inquiry. While the amount and nature of pollution emanating from coal trains was a contested point,⁵ it did appear that coal trains are a source of air pollution. Dust emissions from coal can also be released during the loading and unloading of coal during transport, whether by truck, train or conveyor.

4.6 Finally, coal is used extensively for power generation in Australia. This process involves the burning of coal which results in the emission of various compounds such as sulphur dioxide, oxides of nitrogen, and particulate matter. The committee heard that combustion of coal in power plants was a leading source of PM_{2.5}:

In relation to PM_{2.5}s electricity generation, coal fired and coalmining are just two sources of particulate matter of PM-size 2.5 or less in Australia. In relation to Victoria, four of Australia's six largest-emitting single-emitting facilities of PM_{2.5} are in Victoria's Latrobe Valley, including Loy Yang, Yallourn, Loy Yang B and Hazelwood power stations. Eight of the nation's top ten emitters of PM_{2.5}s around the country are power stations.⁶

Impact of coal dust on health

4.7 Dr Jeremijenko informed the committee that:

Coal dust is obviously a risk; it is all the impurities that go along with it in the transport, as well. Coal may have arsenic, lead, heavy metals, mercury.

...

The science is clear that coaldust is a killer if you are exposed to it too much, so the simple thing is to remove that risk as much as possible.⁷

4.8 It was asserted to the committee that emissions from coal extraction and transport tended to be coarse particles rather than the fine particles that are more harmful to health.⁸ As the Deputy Chief Executive Officer of NQBP argued:

The CSIRO work that I cited a moment ago clearly makes that distinction. The point is this: there is a body of literature that clearly links some health risks to the smaller finer particulate matter. Such a body of literature does not seem to be evident for the larger material. I think the point is that if we

4 Ms Roberts, Campaign Organiser, Communities Protecting Our Regions, *Committee Hansard*, 11 June 2013, pp. 44–45.

5 Mr Roche, Chief Executive, Queensland Resources Council, *Committee Hansard*, 11 June 2013, p. 12.

6 Dr Redenbach, Representative, Quit Coal, *Committee Hansard*, 17 May 2013, p. 51.

7 Dr Jeremijenko, Occupational and Environmental Physician – Australasian Faculty of Occupational and Environmental Medicine, *Committee Hansard*, 11 June 2013, pp. 61, 63.

8 Mr Stewart–Harris, Deputy Chief Executive Officer, North Queensland Bulk Ports Corporation, *Committee Hansard*, 11 June 2013, p. 35.

are trying to lump this all together and say 'all coal dust is bad', frankly, the literature does not support that.⁹

4.9 As was noted earlier in this report, epidemiological research has shown that there is no safe level of exposure to particulate matter. Although it is unclear whether coal in and of itself is better or worse than other particulates, there are locations where populations are exposed to large volumes of air pollution because of the activities surrounding coal mining and its transport or combustion. The committee heard from one Jondaryan resident who related her health concerns:

We get burning eyes, a burning tongue, a sore throat and burning throat. I am a bit croaky, that is from coal. We also suffer from itchy skin, ringing in the ears, ringing in your brain. Sometimes at night, you go to sleep and your brain is swishing like it is running around in your head. It will wake you at 3.30 in the morning and you will not get to sleep again because you will just sit there and hold your head. We suffer from lack of concentration. We have jaw problems. Because of the noise from the plant we are not sleeping properly. The dentist told me we are just clenching our teeth in our sleep and that is causing us to have jaw problems. Of course, then we have the fits of anger, hopelessness and depression that just go along with frustration of nobody listening and nobody caring.¹⁰

4.10 The committee received similar anecdotal evidence from the Moranbah Cumulative Impacts Group who indicated that there is a heightened rate of asthma in the town, but that this is difficult to directly attribute to coal dust rather than other sources of pollution such as smoking and airborne pollens.¹¹ The Asthma Foundation New South Wales argued that proximity to coalmines has been linked to higher rates of asthma,¹² and cited research from 2010:

In May 2010 the New South Wales government released a report on child health which showed that nearly 40 per cent of nine-to-15-year-olds in the Hunter Valley and the New England region had suffered at some stage from asthma. That is significantly above the national average of 10 per cent. Other areas that have expressed concerns are the Hunter Valley and Lithgow in the Blue Mountains, which has a coalmine, a newly extended coal fired power station and an asthma rate 80 per cent higher than the New South Wales average.¹³

9 Mr Stewart–Harris, Deputy Chief Executive Officer, North Queensland Bulk Ports Corporation, *Committee Hansard*, 11 June 2013, p. 36.

10 Ms Hammond, private capacity, *Committee Hansard*, 11 June 2013, p. 28.

11 Ms Dix, Member Representative, Moranbah Cumulative Impacts Group, *Committee Hansard*, 11 June 2013, p. 46.

12 Mrs Goldman, Chief Executive Officer, Asthma Foundation New South Wales, *Committee Hansard*, 17 May 2013, p. 41.

13 Mrs Goldman, Chief Executive Officer, Asthma Foundation New South Wales, *Committee Hansard*, 17 May 2013, p. 43.

4.11 The committee heard that some companies paid for annual health checks of their workforce to protect against exposure and provided extensive written guidance on protecting health, but that similar services were not provided to nearby communities,¹⁴ which had to pay for their own healthcare.¹⁵

4.12 Greenpeace Australia Pacific argued that there has been insufficient research undertaken to understand the impact on health of coal affected communities, despite many communities reporting health concerns.¹⁶ The committee heard concerns that residents in Anglesea in Victoria who are living half a kilometre from an open cut coal mine were unable to assess whether their community was at risk because no independent monitoring is being undertaken.¹⁷

4.13 A number of communities expressed their concerns to the committee about the possible impact of coaldust on human health. Evidence from the Mackay group Communities Protecting Our Regions explained:

We found very clearly that people were concerned about coal dust. It was one of their main concerns about the Dudgeon Point coal port proposal, and in fact we found that this was their primary concern. We found this as we continued to campaign on the coal port—that is, that is one of the main things that people are concerned about.¹⁸

4.14 The Moranbah Cumulative Impacts Group similarly informed the committee that 'quite a lot of residents have become concerned for their health.'¹⁹

Protecting vulnerable communities

4.15 Occupational and environmental physician Dr Jeremijenko argued that it is possible to significantly reduce the risk from coal mining and its associated activities:

We know what works; we have applied it at the coalface and there are other ways—like dust suppression, covering coal trains and others—that we can reduce the risk.²⁰

14 Ms Hammond, private capacity, *Committee Hansard*, 11 June 2013, p. 28.

15 Dr Jeremijenko, Occupational and Environmental Physician – Australasian Faculty of Occupational and Environmental Medicine, *Committee Hansard*, 11 June 2013, p. 61.

16 Ms Woods, Senior Climate Campaigner, Greenpeace Australia Pacific, *Committee Hansard*, 11 June 2013, p. 29.

17 Associate Professor Carey, Member – Management Committee, Doctors for the Environment, *Committee Hansard*, 17 May 2013, p. 3.

18 Ms Roberts, Campaign Organiser, Communities Protecting Our Regions, *Committee Hansard*, 11 June 2013, p. 44.

19 Ms Dix, Member Representative, Moranbah Cumulative Impacts Group, *Committee Hansard*, 11 June 2013, p. 46.

20 Dr Jeremijenko, Occupational and Environmental Physician – Australasian Faculty of Occupational and Environmental Medicine, *Committee Hansard*, 11 June 2013, p. 58.

4.16 Furthermore, it was argued that protecting vulnerable communities through pit to port dust management receives less emphasis than minimising emissions at the coal-face:

There are a lot of areas where we could do a lot more work and address this a lot more proactively. It is a high risk, in my view, and it is a high risk that goes right past the homes and the schools of many people, and it is not being treated and addressed with the same level of risk management as we treat it with at the coalface.²¹

4.17 Broadly speaking, the committee has identified two categories of protective measures that must be considered for these vulnerable communities: minimising the creation of dust, and limiting human exposure to dust that is unable to be managed. Some solutions put to the committee addressed both of these measures, such as best practice loading techniques described below. Most solutions identified, however, were directed towards limiting exposure to dust. These may keep people away from the dust, minimise the time people are exposed to a hazard, or involve the use of personal protective equipment such as face masks.²² The use of personal protective equipment is not a realistic approach for residents living near coal industry facilities, meaning that engineering, planning and administrative solutions are critical.

4.18 It was recommended by several stakeholders, including the Lock the Gate Alliance, that there should be 'an absolute minimum' mine set-back of two kilometres from residential areas.²³ The committee heard that in Queensland a two-kilometre minimum buffer exists for towns above 1000 inhabitants.²⁴ The committee heard that buffers are a useful solution because they are easily verified by regulatory bodies:

I think the concept of buffer areas between the stockpile or the mine, and the community is incredibly important, because in terms of enforcement—and we talked about enforcement a little earlier—it is something you can see. There is the mine and there is a two-kilometre buffer and you do not have uncertainty as to whether the standards are being met through complicated monitoring. You can see there is a gap.²⁵

4.19 Although the two-kilometre minimum was put to the committee, it was emphasized that the buffer necessary to protect residential populations would depend

21 Dr Jeremijenko, Occupational and Environmental Physician – Australasian Faculty of Occupational and Environmental Medicine, *Committee Hansard*, 11 June 2013, p. 61.

22 Dr Jeremijenko, Occupational and Environmental Physician – Australasian Faculty of Occupational and Environmental Medicine, *Committee Hansard*, 11 June 2013, pp. 62–3.

23 Mrs Goldman, Chief Executive Officer, Asthma Foundation New South Wales, *Committee Hansard*, 17 May 2013, p. 44; Mr Hutton, President, Lock the Gate Alliance, *Committee Hansard*, 11 June 2013, p. 52.

24 Mr Hutton, President, Lock the Gate Alliance, *Committee Hansard*, 11 June 2013, p. 55.

25 Ms Bragg, representative, Australian Network of Environmental Defenders Offices, *Committee Hansard*, 11 June 2013, p. 64.

on the size and characteristics of each individual mine.²⁶ The MCA recognised that buffer zones are a means to reduce direct exposure to particulate matter from coal mining.²⁷

4.20 In an apparent recognition of the utility of keeping industrial and residential areas separate, the committee was informed that in the case of Jondaryan, the company's mine continuation plan involves moving the loading facility 'well away from Jondaryan into the heart of the mining leases and well away from any sort of urban or residential areas.'²⁸

4.21 In addition to buffer zones, containing stockpiles by either covering or the use of veneers was also identified as a possible engineering solution to manage coal emissions. In response to questions regarding the use of covers of stockpiles at storage facilities, the committee was informed that:

Over a certain size it just becomes impractical to cover coal stockpiles. As we said, with veneers, these surface veneers are very effective in high-wind conditions. The moisture controls and the veneering together manage to control stockyard dust emissions, which is the major source of dust in the coal terminal.²⁹

4.22 It was clarified however that veneer is only useful when a stockpile is not being reclaimed as once the veneer's surface is broken the stack once again becomes a source of dust emissions, and therefore is only used when the stockpile is not being actively reclaimed or stacked.³⁰

4.23 In relation to coal dust emissions during transportation, the committee heard that there are a number of ways that coal can be moved from mine, to train, to ship using a number of different technologies. As Dr Smith explained, best-practice loading techniques minimise dust emissions:

There are best-practice loading techniques for loading coal, and that is typically having an overhead hopper and dropping the coal into the wagons. That is not what is done at Jondaryan. They use dozers and front-end loaders to load the coal. You can imagine that that causes a lot of dust. So those sorts of suggestions seem to be things that would help to alleviate the problem.³¹

26 Ms Bragg, representative, Australian Network of Environmental Defenders Offices, *Committee Hansard*, 11 June 2013, p. 64.

27 Mr Wagner, Executive Director, Northern Territory Division, Minerals Council of Australia, *Committee Hansard*, 16 April 2013, p. 21.

28 Mr Roche, Chief Executive, Queensland Resources Council, *Committee Hansard*, 11 June 2013, p. 19.

29 Mr Brunner, General Manager – Planning, Hay Point, North Queensland Bulk Ports Corporation, *Committee Hansard*, 11 June 2013, p. 39.

30 Mr Brunner, General Manager – Planning, Hay Point, North Queensland Bulk Ports Corporation, *Committee Hansard*, 11 June 2013, p. 43.

31 Dr Smith, Friends of the Earth, *Committee Hansard*, 11 June 2013, p. 32.

4.24 The committee heard that in other towns such as Wynnum unloading takes place in a shed to limit renegade particles; a practice that reportedly produces better air quality for nearby residents.³² The committee was also informed of the dust minimisation systems used in the port of Hay Point:

On rail receipt, in the port of Hay Point we use best practice techniques. Rail wagons are unloaded in a building with a roof and two sides. We have dust extinguishment systems in which we collect any dust from the rail dump hoppers and we extract that and contain it. With the in-loading and stockyard conveyors, we have designed the conveyors to minimise dust generation. Transfer sheets are sealed between entry at the head-sheet and exit onto the downstream conveyor. We use belt scrappers and belt washing. Floors under conveyors are sealed for elevating conveyors, draining to the coal collection pit. I could go on, but I suspect there is not much value in me giving you a full range of techniques.

...

The wagons in the port of Hay Point are all bottom-dump. The coal is released into hoppers, and that is in a partially enclosed building with dust-extraction systems. The coal is washed or brushed from the wheels of the wagons, but the wagons themselves are not washed before they go back.

...

The other thing is that, in recent times—partly for dust and partly for noise attenuation—these particular receipt dump station sheds have had those heavy clear PVC-type curtains put around them so that the fit of the train through the aperture into the shed is a lot tighter now than it used to be, to prevent dust emissions and to help with the noise attenuation.³³

4.25 Some stakeholders suggested that the best way to manage dust from coal trains was through the use of covered wagons.³⁴ The committee heard that:

Closing the cabins and enclosing the coaldust seems like a very sensible solution. I do not know why it has not been done...It is just putting a top on the wagons. As they said, when you bring coaldust in it vibrates and, even though you veneer some or all of them, some will still be released. But as you go back again you have empty coal trains with coaldust at the bottom; they do not empty totally. So it just seems to make good sense for them to be covered. I think this is a risk that can be managed.³⁵

32 Dr Smith, Friends of the Earth, *Committee Hansard*, 11 June 2013, p. 32.

33 Mr Brunner, General Manager – Planning, Hay Point, North Queensland Bulk Ports Corporation, *Committee Hansard*, 11 June 2013, pp. 38, 42, .

34 Mr Gordon, Spokesperson, Stop Brisbane Coal Trains, *Committee Hansard*, 11 June 2013, p. 50; Mrs Goldman, Chief Executive Officer, Asthma Foundation New South Wales, *Committee Hansard*, 17 May 2013, p. 44.

35 Dr Jeremijenko, Occupational and Environmental Physician – Australasian Faculty of Occupational and Environmental Medicine, *Committee Hansard*, 11 June 2013, p. 63.

4.26 The Asthma Foundation of NSW posited that as well as being a simple and effective measure, covering coal wagons would reduce the exposure of large populations in the towns and suburbs transited by rail infrastructure; groups whose exposure is not directly offset with employment or other benefits.³⁶

4.27 The New South Wales Minerals Council (NSWMC) queried the value of covering wagons, however, stating: 'Research to date suggests that this would be an extremely expensive action that would have little or no effect on dust and air quality near rail lines.'³⁷ This however appeared to be contradicted by evidence from the Queensland Resources Council (QRC) that said that veneering in central Queensland had significantly reduced dust emissions.³⁸

4.28 The QRC provided the committee with an evaluation of the cost-effectiveness of introducing wagon lids commissioned by Queensland Rail Limited. Queensland Rail Limited estimated that the costs to provide and operate lids on all coal wagons in Australia would be approximately \$10 per wagon, per day.³⁹ While the evaluation concludes that it would not be cost effective for Queensland Rail Limited to introduce lids at the current time, the analysis notes that the introduction of covers on coal wagons 'would almost eliminate coal dust emissions from the primary dust source'. Given this, the analysis notes that its assessment of cost effectiveness 'cannot be taken at face value'. The analysis further notes that the scores used to determine cost effectiveness 'are highly dependent upon the operational impact and reliability of the lids, [neither] of which can be accurately estimated without a thorough investigation'.⁴⁰

4.29 The QRC informed the committee that covered wagons used in some international jurisdictions are utilised to protect the cargo from issues such as ice and snow, not to reduce dust emissions.⁴¹ The QRC further claimed that covering wagons was unnecessary, as industry in Queensland had commenced veneering coal wagons to reduce dust:

Veneering has proved itself worldwide to be the most effective means of suppressing dust from coal wagons. As our submission notes, there is no significant health or amenity benefit from putting lids on wagons, just

36 Mrs Goldman, Chief Executive Officer, Asthma Foundation New South Wales, *Committee Hansard*, 17 May 2013, p. 46.

37 NSW Minerals Council, *Submission 71*, p. 10.

38 Mr Roche, Chief Executive, Queensland Resources Council, *Committee Hansard*, 11 June 2013, p. 12.

39 Queensland Resources Council, answer to question on notice 1 June 2013 (received 26 June 2013), p. 26.

40 Queensland Resources Council, answer to question on notice 1 June 2013 (received 26 June 2013), p. 28.

41 Mr Roche, Chief Executive, Queensland Resources Council, *Committee Hansard*, 11 June 2013, p. 17.

significant cost implications for everyone on the supply chain from pit to port.⁴²

...

Veneering is world-leading dust suppression technology. All Queensland coalmines in Central Queensland and in the Surat Basin have committed to introducing veneering by the end of 2013. In Central Queensland, where the majority of mines are already veneering their coal, the practice has led to dust reductions of up to 90 per cent.⁴³

4.30 Similarly NQBP argued strongly in support of the use of veneering to minimise dust from coal trains:

One of the things that we can take some comfort from is that veneering of coal wagons with polymer veneers to suppress dust from blowing off wagons has been demonstrated to be particularly effective. By the end of this calendar year, all receiving coals to the port of Hay Point will be veneered. That is just one simple measure that has been a continuous improvement that has been applied and that is at the, I guess, sourced, port part of the supply.⁴⁴

4.31 Representatives from NQBP provided evidence to the committee regarding the mechanisms and strategies used to minimise dust emissions while in the stockpile and during transit phases through the use of moisture management and veneers:

There is a relationship between moisture content and dust generation. We test each one to determine the optimum moisture content and we aim to control the moisture content of that coal right from the mine all the way through to the ship.

...

Probably the one major control at the port is the fact that in the stockyards at Hay Point we have a dust control system to keep that coal at its optimum moisture content. We have automatic water spray systems. We estimate the evaporation from the coal stockpiles and those spray systems automatically apply water to keep the coal at that optimum moisture content. If the winds get too high and dry it out too fast for the stockyard sprays, the veneer can be applied. Those veneers are very effective. We have had testing done on dust suppression for the coals that indicates that, at certain wind conditions, the veneer gets dust emissions down to zero.⁴⁵

42 Mr Roche, Chief Executive, Queensland Resources Council, *Committee Hansard*, 11 June 2013, p. 13.

43 Mr Roche, Chief Executive, Queensland Resources Council, *Committee Hansard*, 11 June 2013, p. 12.

44 Mr Stewart-Harris, Deputy Chief Executive Officer, North Queensland Bulk Ports Corporation, *Committee Hansard*, 11 June 2013, p. 38.

45 Mr Brunner, General Manager – Planning, Hay Point, North Queensland Bulk Ports Corporation, *Committee Hansard*, 11 June 2013, pp. 38–39.

4.32 In relation to power generation, the committee heard that there is technology available to reduce the emissions from coal fired power plants that is used in other jurisdictions with tighter emissions standards:

Here, frequently the sulphur dioxide levels do exceed the 75 parts per million that would be allowed in the US. So yes, that is correct: it frequently exceeds what would be allowed in the United States. And exceedences are not uncommon, or occur on a semi-regular basis, certainly much more so in the past at Anglesea than they do now, and that is because the company has put in place a procedure of actually switching down the power station when the sulphur dioxide levels exceed the accepted level. In fact, sulphur dioxide pollution control measures that can be fitted to power stations exist. Those could be fitted to the Anglesea power station, but the company has chosen instead to implement a protocol whereby the output of the power station is decreased when sulphur dioxide levels exceed the acceptable level.⁴⁶

4.33 The committee also heard that reductions in coal combustion and fossil fuel combustion generally, 'can improve human health directly by reducing chronic disease risks from air pollution as well as indirectly from mitigation of climate change'.⁴⁷

Regulation

4.34 The regulation of coal mines, especially regarding their possible environmental and health impacts, was a significant point of contention in the evidence received by the committee. For the most part, the approval and monitoring of coal mines is a function of State and Territory governments and as such subject to variations between jurisdictions. As a result of this, the committee heard that 'there is also considerable difference in transparency and consistency in the application of air quality controls on different mines within the same state jurisdiction and also between state jurisdictions'.⁴⁸

Approval processes

4.35 Some stakeholders argued that the approval process for new mines did not consider cumulative impacts of additional developments in a single area during the approvals process:

There are plenty of EISs done on mining projects, and I include especially the coal seam gas projects here in Queensland, where cumulative impacts are not even looked at. When you put this particular project in with a whole lot of other projects, there are no attempts to quantify what that might mean, or, if they do it, they do it in the most offhand manner, as has

46 Dr Redenbach, Representative, Quit Coal, *Committee Hansard*, 17 May 2013, p. 56.

47 Associate Professor Carey, Member – Management Committee, Doctors for the Environment, *Committee Hansard*, 17 May 2013, p. 2.

48 Ms Woods, Senior Climate Campaigner, Greenpeace Australia Pacific, *Committee Hansard*, 11 June 2013, p. 30.

happened in Gladstone, just simply by saying, 'Gladstone is already over allocated so it does not matter if we do one more.'⁴⁹

4.36 The NSW EPA informed the committee that they had adopted air quality targets in certain air sheds. The emissions from new developments would need to be assessed against that target:

That was one of the points I was making about the fact that we have now adopted this target level that we are trying to achieve for the Upper Hunter. That is all around new mines that are being proposed, new activities, and what is it that we have to do to achieve that target. So if you think about that target of eight, for PM2.5, for that air shed that is a cumulative impact target that we are talking about.⁵⁰

4.37 The NSW EPA informed the committee that all coalmines have an environmental protection licence that is issued by the EPA which includes conditions covering environmental performance such as dust.⁵¹

Regulatory approaches

4.38 The committee received evidence that in Queensland companies are responsible for monitoring and managing their dust emissions. Some submitters argued that the system was not effective in controlling air quality:

[I]n this state we do not have a regulatory model, we have a self-regulatory model. We do not have an EPA or a department of environment and heritage protection, or whatever it is called these days, that actually does audits of mine sites or audits of extractive industry. The companies do all of that. All that the regulator does is gather audits on paper. They do paper audits. They do not do on-site audits. They do not do on-site monitoring. All the regulator does is respond to complaints. So it is a complaint driven regulatory model with self-regulation as the main basis for the whole thing. Basically a company has to put up its hand for a breach, if there is a breach. It is never found out by the regulator itself.⁵²

4.39 It was reported that a similar practice is adopted in Victoria where in many places the EPA does not have the resources to monitor industry sources and therefore relies on self-regulation.⁵³

4.40 In addition to its general monitoring, the committee was told that, the NSW EPA responds to community complaints regarding the activities from a mine and will

49 Mr Hutton, President, Lock the Gate Alliance, *Committee Hansard*, 11 June 2013, p. 52.

50 Mr Buffier, Chief Executive Officer, New South Wales Environmental Protection Authority, *Committee Hansard*, 16 April 2013, p. 10.

51 Mr Davey, Director – North Branch, New South Wales Environmental Protection Authority, *Committee Hansard*, 16 April 2013, p. 9.

52 Mr Hutton, President, Lock the Gate Alliance, *Committee Hansard*, 11 June 2013, p. 52.

53 Associate Professor Carey, Member – Management Committee, Doctors for the Environment, *Committee Hansard*, 17 May 2013, p. 4.

investigate further, either via the telephone or in person.⁵⁴ Evidence provided by the NSW EPA appears to indicate a more proactive approach to reducing emissions from coalmining in NSW:

In terms of where our priorities are, the Hunter Valley is clearly one of those...We recognise, along with the community, that impacts of particle pollution on the Hunter region are increasing and likely to increase further in the absence of any action, because of the expansion of the coal mining industry. Last year we established an interagency task force...to work together on managing air quality by improving our planning and enforcement activities.⁵⁵

4.41 Mr Buffier reported to the committee that one of the reasons for the establishment of this taskforce was 2012 data showing an increasing number of exceedences of the PM_{2.5} advisory standards and PM₁₀ levels.⁵⁶

4.42 It was reported further that open cut coal mines across New South Wales are subject to particular pollution reduction programs to minimise dust from haul roads, stockpiles, and the operation of machinery which aims to reduce particulate emissions from mines by 20 per cent.⁵⁷

Enforceability

4.43 In order to be enforceable, regulations and permits must be sufficiently explicit and prescriptive in what they require an operator to do, and the standards to which they will be held to account. ANEDO, using the permit for the Jondaryan mine as an example, highlighted that there is no reference to the control of damaging fine particles,⁵⁸ and the monitoring of PM₁₀ is to be monitored 'at a sensitive place downwind of the operational land', without specifying other factors such as distance from the mine or proximity to residences.⁵⁹

4.44 State government authorities also need to be appropriately resourced in order to properly discharge their duties. The committee heard concerns that recent or

54 Mr Davey, Director – North Branch, New South Wales Environmental Protection Authority, *Committee Hansard*, 16 April 2013, p. 9.

55 Mr Buffier, Chief Executive Officer, New South Wales Environmental Protection Authority, *Committee Hansard*, 16 April 2013, p. 2.

56 Mr Buffier, Chief Executive Officer, New South Wales Environmental Protection Authority, *Committee Hansard*, 16 April 2013, p. 2.

57 Mr Davey, Director – North Branch, New South Wales Environmental Protection Authority, *Committee Hansard*, 16 April 2013, p. 8; Mr Buffier, Chief Executive Officer, New South Wales Environmental Protection Authority, *Committee Hansard*, 16 April 2013, p. 10.

58 Ms Bragg, representative, Australian Network of Environmental Defenders Offices, *Committee Hansard*, 11 June 2013, p. 52.

59 Permit Number: MIN100550507, tabled by the Queensland Environmental Defenders' Office, 11 June 2013, p. 3.

prospective cuts to regulatory authorities limit the capacity of the public sector to appropriately monitor the private sector.⁶⁰

Appropriate regulations for vulnerable groups

4.45 The committee heard evidence, noted previously in this report, that children are particularly vulnerable to health impacts of poor air quality. An important point was raised by Dr Jeremijenko in relation to this fact:

The different effect of coal dust on children is quite significant. Their lungs are developing. Coal dust has been shown to have a much greater effect on children's developing lungs, so the standards written for coal workers, even for the PM10s that are measured, are not the same as what would be written for children. We need to consider that because these coal trains are going through the suburbs. It is really important that the children's health is protected as well as the health of adults in the community. I think that has been totally ignored in this situation.⁶¹

4.46 In order to be effective guardians of community health, regulations must take into account that a standard that is acceptable for one group or locations may need to be more stringent for another, such as children. The committee received evidence that coal trains and stockpiles are often proximate to playgrounds, childcare centres and schools.⁶² Measurements undertaken by the Hunter Community Environment Centre, for example, showed elevated levels of pollution in people's homes and gardens compared to official monitoring.⁶³

Balancing economic, environmental and health concerns

4.47 Although the committee received a large body of evidence largely critical of some of the current practices of the coal industry broadly, many also believe that coal is an important source of employment and economic activity – especially in smaller communities, but one that needed to be monitored. The Asthma Foundation New South Wales noted for instance:

I do not think [communities] will want to see extreme measures that are going to reduce economic benefits like employment, but I am sure that responsible measures that would allow the coal industry to continue to do

60 Ms Bragg, representative, Australian Network of Environmental Defenders Offices, *Committee Hansard*, 11 June 2013, p. 59; Associate Professor Carey, Member – Management Committee, Doctors for the Environment, *Committee Hansard*, 17 May 2013, p. 5.

61 Dr Jeremijenko, Occupational and Environmental Physician – Australasian Faculty of Occupational and Environmental Medicine, *Committee Hansard*, 11 June 2013, p. 58.

62 Associate Professor Higginbotham, Committee Member – Dust and Health Committee, Hunter Community Environment Centre, *Committee Hansard*, 16 April 2013, p. 14.

63 Associate Professor Higginbotham, Committee Member – Dust and Health Committee, Hunter Community Environment Centre, *Committee Hansard*, 16 April 2013, pp. 14–15.

its bit for Australia without causing a great degree of impact on the health of Australian citizens would be very welcome.⁶⁴

4.48 Similarly, Professor Jalaludin commented:

If you have a large number of small communities, the science would suggest that, yes, in terms of equity they should not be exposed to high levels of air pollution also. Ultimately it might come down to a political decision about the costs of trying to reduce air pollution to such low levels and what might be the benefits of it. If, for example, we are thinking of the Hunter Valley and the coalmines, what are the benefits in terms of employment and so on? That is a difficult decision to make, but I think we should not forget the issue around equity. Is it fair to let one community be exposed to high levels of air pollutants so that the larger population can benefit from that? That is a difficult issue. I do not think there is a right or wrong answer.⁶⁵

Committee view

4.49 The committee accepts that coal, throughout its lifecycle, is a source of air pollution that is harmful to human health. Those harms manifest themselves in individual discomfort and at a cost to private and public purses. Coal is also a part of the Australian economy both as an export earner and a source of cheap electricity. Governments and communities together need to decide what level of pollution they are willing to tolerate. It appears clear, however, that there are some concrete steps that can be taken that would minimise coal pollution and manage the risks associated with it. The committee considers that measures such as the covering of coal wagons are appropriate regulatory steps to take towards minimising the impact of coal emissions on vulnerable communities.

Recommendation 6

4.50 The committee recommends that states and territories require industry to implement covers on all coal wagon fleets.

Recommendation 7

4.51 The committee recommends that the Commonwealth develop and implement a process for assessing cumulative impacts of coal mine developments that take into account other mines in the region and their impact on resident health.

Recommendation 8

4.52 The committee recommends that health impact assessments be required as part of the assessment process for all new developments.

64 Mrs Goldman, Chief Executive Officer, Asthma Foundation New South Wales, *Committee Hansard*, 17 May 2013, p. 44.

65 Professor Jalaludin, Centre for Air Quality and Health Research and Evaluation, *Committee Hansard*, 16 April 2013, p. 32.