

6 November 2015

NSW Department of Industry
Division of Resources and Energy
By email: resources.submissions@industry.nsw.gov.au

NSW Department of Planning and Environment
Resources and Industry Policy
By email: information@planning.nsw.gov.au

Dear Directors

**Draft Strategic Release Framework for Coal and Petroleum Exploration; and
Draft Preliminary Regional Issues Assessment Guidelines**

As you know, EDO NSW is a community legal centre specialising in public interest environmental law, including casework, law reform, science and community outreach.

We welcome the opportunity to comment on these related draft policies. We note that the Department of Industry (Division of Resources and Energy) is responsible for the Strategic Release Framework (**SRF**) and the Department of Planning and Environment is responsible for the Preliminary Regional Issues Assessment Guidelines (**PRIA Guidelines**). This submission addresses both policies jointly, and makes 6 recommendations across the following areas:

- 1. Mining and Gas Bills (now passed) affect Strategic Release Framework**
- 2. Implement Preliminary Assessment and Advisory Body in legislation**
- 3. Include independent experts and added transparency for Advisory Body**
- 4. Consider climate change in Strategic Framework and PRIA Guidelines**
- 5. Preliminary Regional Impact Assessment must go beyond existing data (precautionary principle, clear criteria, exclusions, cumulative impacts)**
- 6. Prior submission to Coal Exploration Steering Group.**

1. Mining and Gas Bills (now passed) affect Strategic Release Framework

Since the draft SRF was issued, the NSW Government introduced a significant package of five bills on mining and gas reform into Parliament on 15 October 2015. The bills were passed within a week. These included the *Mining and Petroleum Legislation Amendment (Grant of Coal and Petroleum Prospecting Titles) Bill* (**Grant of Titles Bill**), which is directly relevant to the SRF. Other Bills made further significant reforms to exploration and land access rights for minerals and gas.¹

¹ i.e. Under the *Mining Act 1992* and *Petroleum (Onshore) Act 1991*.

The introduction and passage of these Bills during the consultation period on the draft SRF, and the lack of full stakeholder consultation and briefing on the Bills, sends confusing messages about what the Government is seeking comment on and how the many pieces of law and policy reform fit together.

2. Implement Preliminary Assessment and Advisory Body in Legislation

The Grant of Titles Bill (now passed) sets out a new competitive tender process for all exploration titles, as recommended by ICAC. However, the Bill does not include provisions to establish the PRIA process, or the Advisory Body for Strategic Release (**Advisory Body**) connected with the draft SRF.

The absence of any reference to the PRIA or Advisory Body in law is problematic. The draft SRF consultation webpage notes: ‘The draft Framework will be enabled through legislation that the NSW Government will be bringing forward.’ The package of Bills just passed don’t do this. However, we would support these processes and bodies being given effect in further legislation once public comments are considered. We would welcome the opportunity to discuss these issues with your Departments.

Recommendation 1: The Preliminary Regional Impact Assessment process and the Advisory Body for Strategic Release should be given detailed effect in legislation (subject to our further recommendations). Release of exploration areas should be prohibited unless these processes have been followed.

3. Include independent experts and added transparency for Advisory Body

The Advisory Body is proposed to include senior agency representation only. By contrast, the Chief Scientist’s Report (2014, p 2) noted the need for ‘independent impartial experts’ to be part of any future CSG regulatory framework.² The same is necessary for coal.

The Chief Scientist’s recommendation 5 was:

That Government use its planning powers and capability to designate those areas of the State in which CSG activity is permitted to occur, drawing on appropriate external expertise as necessary.

We submit that upfront independent expertise is critical at the strategic release stage. Membership criteria should be set out in legislation. For example, this has been done for the water-focused Independent Expert Scientific Committee on Coal and Coal Seam Gas under federal law. Section 505C of the *Environment Protection and Biodiversity Conservation Act 1999* sets out and requires appropriate scientific qualifications and expertise; and s. 505D sets out the Committee’s functions in law.

² Chief Scientist & Engineer, *Final Report of the Independent Review of Coal Seam Gas Activities in NSW*, September 2014

Recommendation 2: *The Advisory Body on Strategic Release should incorporate a number of independent, arms-length members appointed based on their expertise in physical, biological and social sciences, to advise on strategic environmental, social and land-use impacts.*

4. Consider climate change in Strategic Framework and PRIA Guidelines

NSW needs to plan for a carbon constrained future. The lifecycle of coal and gas assets means that many new (and existing) coal and gas exploration areas could operate up to and beyond 2050. As the Government notes: 'Three-quarters of NSW emissions come from the extraction, processing and burning of fossil fuels (primarily coal)'.³

The absence of a strategic framework to consider and reduce NSW carbon emissions from the energy sector is a critical policy gap that needs to be filled. However, no other part of the NSW planning or licensing framework⁴ performs this strategic climate risk assessment, either in the context of avoiding 2 degrees' warming, or the drawing down of a national or state carbon pollution budget.

The federal Climate Change Authority recommended a national carbon budget of 10.1 billion tonnes CO₂-equivalent between 2013 and 2050.⁵ NSW emissions in 2011-12 were 155 million tons CO₂-e.⁶ If this were the ongoing average to 2050, NSW would use around 57% of Australia's carbon budget, despite having only one-third of the population.⁷

Any framework to release new exploration areas must therefore consider climate change impacts (both mitigation and adaptation). This is consistent with NSW, national and international agreements to avoid dangerous climate change.⁸ As our previous submission noted:

under the International Energy Agency's (IEA) central forecast for fossil fuel demand, greenhouse emissions 'correspond to a long-term average global temperature increase of 3.6°C.' The IEA has made 4 key policy recommendations to limit warming to no more than 2°C. This internationally-agreed limit [2°C] would in itself have profound economic, social and environmental implications, which Australia's regulatory frameworks must plan for.

³ See: <http://www.climatechange.environment.nsw.gov.au/About-climate-change-in-NSW/NSW-emissions>.

⁴ While Environmental Impact Statements are required to predict emissions from individual project proposals, we know of no policy stating how planning authorities take this into account, individually or cumulatively. See for example, *Integrated Mining Policy* (October 2015), Indicative SEARs (Secretary's Environmental Assessment Requirements), p 18. Also we note the Planning Department's draft *Economic Assessment of Mining Guidelines* (Oct. 2015) exclude scope 3 emissions as secondary impacts, and limit cost-benefit analysis for mines to 30 years (pp 58, 8).

⁵ *Reducing Australia's Greenhouse Gas Emissions: Targets and Progress Review—Final Report* (2013), at <http://www.climatechangeauthority.gov.au/reviews/targets-and-progress-review-3>.

⁶ See: <http://www.climatechange.environment.nsw.gov.au/About-climate-change-in-NSW/NSW-emissions>.

⁷ NSW had 32% of the Australian population in 2015 (Australian Bureau of Statistics, 2015).

⁸ We welcome NSW Government's membership of The Climate Group States and Regions Alliance.

Recommendation 3: Any future Strategic Release Framework must explicitly consider climate change risks and impacts, including via the PRIA and the related geological 'resource assessment'. The Framework and PRIA must:

- a) adopt decision-making tools to ensure 'carbon restraints' are assessed alongside other important ecological restraints;
- b) assess the significant amount of greenhouse gas emissions (e.g. carbon dioxide and methane) that would likely result from opening up new coal and gas resource areas, individually and cumulatively;
- c) assess direct emissions (scope 1), indirect electricity emissions (scope 2) and upstream/downstream (scope 3) emissions such as coal burned overseas; and
- d) assess future regional climate hazard risks such as bushfire, storm and flooding (e.g. Victoria's Hazelwood coal mine fire and Queensland floods).

5. Preliminary Regional Impact Assessment must go beyond existing data

Sufficient data and the precautionary principle

The PRIA Guidelines repeatedly emphasise that the upfront strategic assessment will be based on existing environmental information. However, the NSW Chief Scientist's Review of CSG Legislation (2014) suggests that environmental data needs to be an order of magnitude greater than at present if the industry is to proceed in NSW. The Chief Scientist (2014) noted:

Management of potential risks associated with CSG, as with other industries, requires effective controls... The Review studied the risks associated with the CSG industry in depth and concludes that – provided drilling is allowed only in areas where the geology and hydrogeology can be characterised adequately, and provided that appropriate engineering and scientific solutions are in place to manage the storage, transport, reuse or disposal of produced water and salts – the risks associated with CSG exploration and production can be managed. That said, current risk management needs improvement to reach best practice.⁹

Accordingly, if the amount of existing data on hydrogeology and other environmental conditions (such as biodiversity) is inadequate, a precautionary approach must be adopted, and additional information must be required and obtained before a decision is made on whether an area can be released for exploration.

⁹ Chief Scientist & Engineer, *Final Report of the Independent Review of Coal Seam Gas Activities in NSW*, September 2014, p 10.

Recommendation 4: *The Preliminary Regional Impact Assessment (PRIA) must enable critical environmental data gaps to be identified and redressed, before any area can be recommended or determined to be released for coal or gas exploration. This mechanism should explicitly incorporate the precautionary principle.*

Clear environmental criteria and excluded areas

The environmental factors that the PRIA is to consider should be set out in law. Important environmental areas and areas providing vital ecosystem services should be off-limits to mining, and this should constrain the release of new areas for exploration.

The environmental considerations in the draft PRIA Guidelines (p 5) provide a useful starting point for these considerations. Similarly, we note the NSW Independent Planning Review (2012) recommendations that strategic planning must:¹⁰

Identify sensitive areas containing (or likely to contain) factors that will limit or prevent development taking place, such as:

- *biodiversity and other ecological constraints*
- *significant landscapes or features, including Aboriginal cultural landscapes or sites*
- *riparian corridors*
- *items or localities of likely or known heritage significance*
- *existing land uses that can be expected to place constraints on land use in their vicinity.*

Finally, biodiversity objectives and priorities that are identified in state and regional natural resource management frameworks should also be a key consideration in the PRIA. This is consistent with the NSW Independent Biodiversity Legislation Review Panel (2015) recommendation 15.¹¹

Recommendation 5: *The Strategic Release Framework should identify:*
a) environmental criteria that must legally be considered under the PRIA, and
b) environmental exclusion zones where mining and gas exploration (and production) are off-limits.

¹⁰ Moore, T. and Dyer, T., *The Way Ahead for Planning in NSW – Recommendations of the NSW Planning System Review, Volume 1 – Major Issues* (May 2012), recomm. 8 (among other things).

¹¹ Byron et al. 2015, Recommendation 15: *Ensure that biodiversity objectives and priorities, including priorities identified in a statewide framework or strategy for conservation or in plans prepared by Local Land Services are:*

- a) *reflected in any new state planning policies prepared under the Environmental Planning and Assessment Act 1979*
- b) *incorporated in Regional Growth and Infrastructure Plans and Subregional Delivery Plans, instead of in separate Regional Conservation Plans.*

Cumulative impacts

We welcome consideration of cumulative impacts under the PRIA, but this must be dealt with in greater detail and given effect in legislation as per recommendation 1. One of the main criticisms of coal and CSG expansion to date is inadequate consideration of cumulative environmental impacts – either through strategic planning (SEPPs and LEPs) or project assessment.¹² Even recent initiatives such as the *Strategic Regional Land Use Policy* do not allow upfront rejections via the ‘Gateway’, and fail to integrate biodiversity impacts.

Cumulative impacts barely rate a mention in the *Environmental Planning and Assessment Act 1979*, and mining and CSG laws don’t refer to cumulative impacts at all.¹³ This is a serious flaw, heightened by the fact that CSG, coal mining, agriculture and other land uses are increasingly intersecting uses that can degrade the environment.¹⁴

A 2012 scientific report by former NSW Natural Resources Commissioner, Dr John Williams, makes two salient recommendations on resource assessment and cumulative impacts:¹⁵

Recommendation 1: The approach used for assessing CSG developments (and any other developments) should be, first, to understand regional landscape capacity, and then to determine if there is capacity for the development without crossing landscape limits.

Recommendation 2: Current development approval processes should be updated to approve new developments only on the basis of landscape limits and the expected cumulative impacts of the existing and proposed developments.

We strongly support these recommendations being adopted in the SRF and PRIA.

Williams (2012) notes a practical example of this landscape-centred management approach is a tool developed by the Namoi Catchment Management Authority in Northern NSW. The Namoi tool aims to use comprehensive environmental baseline data to establish the carrying capacity of the landscape, and then models the cumulative impact of potential mining developments to see what activities can take

¹² The Chief Judge of the NSW Land and Environment Court has noted: ‘This failure to deal with cumulative environmental effects is particularly encountered in the fields of biodiversity, water and climate change regulation.’ See The Hon B. Preston, ‘Internalising Ecocentrism in Environmental Law’, Speech to the 3rd Wild Law Conference, 16-18 September 2011, Griffith University, Queensland, pp 6-7.

¹³ That is, *Petroleum (Onshore) Act 1991* (NSW); *Mining Act 1992* (NSW);

¹⁴ See for example, Australian Government Department of Sustainability, Environment, Water, Population and Communities, ‘Pressures on Australian land’, www.environment.gov.au/land/pressures/index.html.

¹⁵ See John Williams Scientific Services Pty Ltd, *An analysis of coal seam gas production and natural resource management in Australia - Issues and ways forward* (October 2012) pp 102-103.

place without exceeding this capacity.¹⁶ Without commenting on the specific outcomes in the Namoi, this is an example of a tool that takes into account strategic-level targets as well as local information and changes. Yet as the Williams review notes: 'Unfortunately the current legislative arrangements in NSW mean that the outputs of the Namoi CMA tool will have no legislative power.'¹⁷

Recommendation 6: *The PRIA process must require and specify how cumulative impacts are to be considered. This must go beyond existing data and include a sophisticated assessment of catchment limits and carrying capacity as recommended in the Williams scientific review of CSG (2012).*

6. Prior submission to Coal Exploration Steering Group

In December 2014 we made a submission to the Coal Exploration Steering Group's discussion paper. The body of that submission (**attached**) addressed 4 key points:

- i) Expanding the Steering Group's remit to coal seam gas (**CSG**) licensing;
- ii) Improving public consultation on coal and CSG licensing decisions;
- iii) Clarifying how 'strategic preliminary issues assessment' integrates with the planning system and principles of Ecologically Sustainable Development; and
- iv) Including climate change considerations.

On issue i), the draft SRF proposes to apply consistent principles and processes to assess new (greenfield) or expanded (brownfield) coal and gas exploration areas for potential release. A consistent approach is appropriate in-principle, given that corruption risks and lack of transparency extend beyond coal to other resources.

We reiterate our comments on issues ii) to iv) above, as detailed at **Attachment A**. We also note and welcome the 2015 Mining SEPP amendments which removed the prioritisation of economic significance as the primary consideration under the SEPP.

We hope this submission is of assistance and we would be happy to discuss further. If you have any further queries please contact me on (02) 9262 6989 or by email.

Yours sincerely,

EDO NSW



Mr Nari Sahukar
Senior Policy & Law Reform Solicitor

¹⁶ See John Williams Scientific Services (2012), p 102; see further EcoLogical Australia, *Proposed Framework for Assessing the Cumulative Risk of Mining on Natural Resource Assets in the Namoi Catchment*, prepared for Namoi CMA (2011).

¹⁷ John Williams Scientific Services, *ibid* (2012), p 102. The Report continues: 'The existing arrangements in NSW and Queensland and federally do not use an assessment of regional landscape capacity and landscape limits to determine what developments should proceed.'

ATTACHMENT A: EDO NSW Submission to Coal Exploration Steering Group, December 2014 (substantive excerpt)

1) Scope of Steering Group's oversight

We note the Steering Group has been specifically tasked with corruption-proofing *coal licensing* procedures in response to ICAC's 2013 recommendations.ⁱ Nevertheless, we submit that similar corruption risks could exist for CSG and other resource licences as for coal licences. ICAC itself draws comparisons to CSG, with reference to the Chief Scientist & Engineer's (interim) review report.ⁱⁱ

The Government's *NSW Gas Plan* (November 2014) commits to develop a new Strategic Release Framework for the 'transparent, informed and strategic' allocation of CSG exploration licences on 'terms that meet community expectations'.ⁱⁱⁱ The Steering Group should canvas this Framework with the NSW Government, with a view to expanding the Steering Group's remit to ensure adequate corruption-proofing and oversight of CSG licensing (along with coal and other resources where appropriate). This is particularly important given the likely increase in the potential value of CSG exploration licensing if this industry expands in NSW; and the comparable degree of decision-making discretion in the *Petroleum (Onshore) Act 1991* (for CSG) as in the *Mining Act 1992* (coal and minerals).

2) Public consultation on coal and CSG licensing decisions

EDO NSW notes the need for significant improvements to community engagement in strategic planning and mining licensing processes, as demonstrated by the ICAC report, Chief Scientist's CSG review, recent CSIRO social research and our own experience.^{iv} As you would be aware, in October 2014 the NSW Chief Scientist & Engineer handed down her final report into CSG regulation. That review found the need for a major regulatory overhaul, including in relation to petroleum title allocation (such as CSG exploration licences and production leases).

As with ICAC's concerns about coal licences (2013, p 29), the Chief Scientist's review noted the potential for the CSG licensing framework to create inappropriate expectations among exploration proponents that subsequent gas production leases will be issued almost automatically.^v EDO NSW notes that the legal framework for CSG (and indeed coal) sets up contradictory expectations for local communities. This is because the strongest opportunity for community engagement is generally the *development consent* stage, after *exploration licences* have already been granted. In some cases, no such consent is required, further limiting opportunities for public input.^{vi}

The Steering Group should consider these and other relevant aspects of the Chief Scientist's CSG review and ICAC's coal licence review, regarding shared lessons for NSW resources licensing (such as the need for better strategic planning, upfront assessment and consultation, and exclusion zones for important socio-economic, heritage and environmental areas). Noting the Steering Group has an important role to play, it remains important that resource licensing decisions do not become a purely inter-departmental or technocratic exercise. Consistent with State Plan goals 29-32 to restore trust in the planning system, public participation, and accountability in government, licensing decisions must receive far greater community input. The

Steering Group should also consider the benefits of community ‘merit appeal’ rights regarding licensing decisions, as a further bulwark against corruption risks.

As a related matter, EDO NSW is concerned about recent rushed, piecemeal proposals to remove CSG exploration activities from the normal consultation process under NSW planning laws.^{vii} This puts CSG exploration back on par with coal exploration, which does not require development consent or mandatory public consultation under planning laws.^{viii} Despite calls for greater public input, these changes move in the opposite direction.

3) ‘Strategic preliminary issues assessment’ and integration with planning system and ESD principles

EDO NSW welcomes the inclusion of *cumulative impacts* as part of the Planning Department’s ‘Strategic Preliminary Issues Assessment’ of coal resources, along with ‘*potential land use conflicts*’ and ‘*biophysical, environmental and heritage*’ matters. However, it should be clarified how such assessments will integrate with planning laws, and be underpinned by principles of ecologically sustainable development (**ESD**), a key object of NSW planning laws.^{ix} As ESD seeks to integrate environmental, social and economic factors in decision making, it is essentially a legal formulation of what ICAC (and the government) refer to as ‘triple bottom line’ assessment (ICAC 2013, recommendation 8). In the context of such assessments, EDO NSW remains concerned about 2013 amendments to the Mining SEPP which make the economic benefits of a mineral resource the ‘principal consideration’ for decision makers relative to other considerations and land uses listed in the SEPP.^x

4) Climate change considerations

Finally, we query why greenhouse gas (**GHG**) emissions (and related climate change risks) are excluded from ‘triple bottom line’ consideration in strategic assessments, either by the Department or Steering Group.^{xi} It is unclear how GHG emissions and climate change risks will otherwise be adequately considered elsewhere in the planning system, at the strategic planning, licensing or development assessment stages.^{xii} This failing is repeated in the Government’s *Strategic Statement on NSW Coal* (August 2014), which ‘aims to realise this economic value while protecting our environment and the health of our communities.’ The Statement also includes a ‘Sustainability’ objective related to ‘triple bottom line considerations to promote comprehensive and balanced decision making’, but omits any reference to considering climate change risks and impacts (or ESD). This is despite climate change related goals (22-23) in the State Plan, *NSW 2021*.

One apparent reason for excluding GHG and climate change from strategic assessments of coal licence decisions is that these are not seen as ‘local’ issues. However, recent scientific opinion published in *Nature* points to the inefficiencies of separating local environmental issues like air pollution from global issues like climate change, noting the public health and climate mitigation benefits of addressing these challenges together.^{xiii}

Risks and impacts of continued emission of GHGs have most recently been made clear in Australia’s *State of the Climate 2014*,^{xiv} and in the Intergovernmental Panel on Climate Change’s *Synthesis Report*.^{xv} Similarly, under the International Energy

Agency's (IEA) central forecast for fossil fuel demand, greenhouse emissions 'correspond to a long-term average global temperature increase of 3.6°C.'^{xvi} The IEA has made 4 key policy recommendations to limit warming to no more than 2°C.^{xvii} This internationally-agreed limit would in itself have profound economic, social and environmental implications, which Australia's regulatory frameworks must plan for.

EDO NSW submits that strategic assessment, licence allocation and planning processes should ensure the social costs of coal mining – such as public health impacts and environmental degradation – are properly accounted for and 'included in the valuation of assets and services'.^{xviii} We recommend that GHG emissions and other climate change mitigation and adaptation considerations apply at each stage of the planning process, beginning with strategic planning and licence allocation decisions.^{xix} For example, this could include estimating emissions from a potential coal resource in the context of a NSW, national or other relevant 'carbon budget'.

We hope this submission is of assistance in progressing the Steering Group's deliberations and recommendations to the NSW Government. If you have any further queries please contact me on (02) 9262 6989 or by return email.

Yours sincerely,
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ⁱ See ICAC, *Reducing the Opportunities for Corruption in the State's Management of Coal Resources* (October 2013), <http://www.icac.nsw.gov.au/media-centre/media-releases/article/4436>.

ⁱⁱ ICAC (2013), pp 28-29.

ⁱⁱⁱ NSW Government, NSW Gas Plan, Nov. 2014, p 8.

^{iv} See for example, Moffat et al, *Australian attitudes toward mining: Citizen Survey – 2014 Results*, 14.

^v See *Petroleum (Onshore) Act 1991*, s 42(2). See also NSW Chief Scientist & Engineer, *Independent Review of Coal Seam Gas Activities in NSW – Study of regulatory compliance systems and processes for coal seam gas*, September 2014, Appendix 2, p. A-32:

- a. *the discretion to grant a PEL or PAL [for CSG exploration] needs to be exercised with care, as once it is awarded, it is very difficult to restrict the production phase; and*
- b. *there will necessarily be heavy reliance on the conditions of the PPL to control and regulate production activities.*

^{vi} That is, for projects assessed and approved under Part 5, *Environmental Planning and Assessment Act 1979* (EP&A Act). See further EDO NSW, *A review of NSW Coal Seam Gas Regulation and International Best Practice*, Nov. 2014, p 4 'Community engagement and landholder rights' - [Download PDF](#).

^{vii} That is, the Government recently exhibited changes to have CSG exploration activities assessed and approved by the Department of Trade and Investment, with no public consultation period or Environmental Impact Statement (EIS) (under Part 5 of the *Environmental Planning and Assessment Act 1979*). This replaces the current requirement for 30 days' public exhibition of a development application and an EIS, assessed and approved by the Department of Planning and Environment or Planning Assessment Commission (under Part 4 and Div. 4.1 of the EP&A Act). See EDO NSW, *Submission on SEPP Amendment (Gas Exploration and Mining) 2014*, Dec. 2014 - [Download PDF](#).

^{viii} *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (Mining SEPP)*, cl. 6.

^{ix} See *Environmental Planning and Assessment Act 1979* (NSW), s 5; which refers to encouraging ESD with reference to principles in the *Protection of the Environmental Administration Act 1991*, s 6.

ESD principles include the precautionary principle; conservation of biodiversity and ecological integrity as a fundamental consideration; inter-generational and intra-generational equity; and proper valuation of environmental costs and benefits (including the 'polluter pays' principle).

^x *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007*, cl. 12AA.

^{xi} The Steering Group's Discussion Paper (p 3) states that 'The [strategic preliminary issues] assessment will not consider non-local issues such as the management of greenhouse gas emissions.'

^{xii} This remains a key failing of the planning system to reflect contemporary resource planning considerations: see for example EDO NSW, *Responses to CSG Inquiry – questions on notice* (2012) pp 10-14 - [Download PDF](#); EDO NSW *Submission on A New Planning System for New South Wales – White Paper*, June 2013, p 34 (and rec's 12, 21, 36, 44, 54, 66, 78 on climate change); see also T. Moore and R. Dyer, NSW Independent Planning Review Panel Report, Vol. 1, rec. 8 and pp 42-43.

^{xiii} J. Schmale et al., 'Air pollution: Clean up our skies', 19 Nov. 2014, *Nature*, at <http://www.nature.com/news/air-pollution-clean-up-our-skies-1.16352>.

^{xiv} Bureau of Meteorology & CSIRO, *State of the Climate 2014*, www.bom.gov.au/state-of-the-climate.

^{xv} UN Intergovernmental Panel on Climate Change, *Climate Change 2014: Synthesis Report*, at <http://www.ipcc.ch/report/ar5/syr/>. For example, the IPCC notes (at p 17): *Without additional mitigation efforts beyond those in place today, and even with adaptation, warming by the end of the 21st century will lead to high to very high risk of severe, widespread, and irreversible impacts globally (high confidence)*.

^{xvi} International Energy Agency, *World Energy Outlook 2013*, see:

<http://www.iea.org/newsroomandevents/pressreleases/2013/november/name-44368-en.html>.

^{xvii} IEA, *World Energy Outlook Special Report, Redrawing the Energy-Climate Map* (2013). In brief:

- Targeted energy efficiency measures in buildings, industry and transport...
- Limiting the construction and use of the least-efficient coal-fired power plants... [significantly increasing the share of renewables (and gas) from 20% now to 27% by 2020]
- Actions to halve expected methane (a potent greenhouse gas) releases into the atmosphere from the upstream oil and gas industry in 2020...
- Implementing a partial phase-out of fossil fuel consumption subsidies...

The report also finds that the energy sector is not immune from the physical impacts of climate change and must adapt. (IEA, '[Four energy policies can keep the 2°C climate goal alive](#)', 10/6/13).

^{xviii} Consistent with the ESD principle on *improved valuation, pricing and incentive mechanisms* (see *Protection of the Environment Administration Act 1991*, s 6(2)(d)). For example, see the US EPA *Social Cost of Carbon* methodology, used to 'estimate the climate benefits of rulemakings', at www.epa.gov/climate/climatechange/EPAactivities/economics/scc.html; on health impact assessment see *Climate Council Briefing Paper: Health Effects Of Coal* (2014), www.climatecouncil.org.au/health-effects-of-coal.

^{xix} See summary of proposed regulatory measures and options in EDO NSW, *Responses to CSG Inquiry – questions on notice* (2012) pp 10-11 - [Download PDF](#). See also *Hunter Environment Lobby Inc v Minister for Planning and Ulan Coal Mines Ltd*, case summary at http://www.edonsw.org.au/mining_coal_seam_gas_cases.