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# **Concerns about the potential Local, Regional and Global Health Impacts of the Proposed Russell Vale Colliery Underground Expansion Project**

**Planning & Assessment Commission, 8 December 2015**

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# This presentation will touch on some health concerns associated with the Russell Vale Expansion



## **Local Health Concerns**

- Increased air pollution risks from coal stockpiling, loading and truck transport

## **Regional Health Concerns**

- Threats to our water catchment area: water security is a health issue

## **Global Health Concerns (including Australia)**

- Greenhouse gas emissions contributing to climate change
- Health impacts overseas

## **Conclusion**

# WaterNSW Principles for Managing Mining and Coal Seam Gas Impacts in Declared Catchment Areas



## 3. Protection of human health in Declared Catchment Areas

In Declared Catchment Areas, **impacts on water quality from mining and coal seam gas activities can increase risks to human health.** WaterNSW must ensure that raw water supplied to customers meets agreed quantities and standards and can be treated to meet Australian Drinking Water Guidelines.

**A comprehensive human health risk assessment should be undertaken for proposed exploration and extraction activities.**

Should an exploration activity be changed to an extraction activity, the human health risk assessment must be repeated to account for a change in potential impacts.



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**Were Health Experts  
consulted in this proposal?**

**Where is the Health Impact Assessment  
that engages community and health  
experts in these assessments?**



<http://sydneyforeveryone.com.au/city/campbelltown/regions/appin/>



Photo by Illawarra Mercury



Photo by Mining Australia



Emplacement Area

Russell Vale

Administrative Building

Truck Load-out Facilities

Track Portal

Breaker Building

Car Parking Area

Broker Street

Bath House

Reclaim Tunnel

Workshop

Water Treatment Facilities

Track Portal

DAM 1

Truck Wash

Weigh Bridge

Rubber Tyre Portal

ROM Stockpile Area

Don's Dam

Bell Conveyor

Corrimal Reservoir No. 1

Corrimal Reservoir No. 2

Dam 6

Dam 5

Stormwater Control Dam

Roadside Dam

Bellambi Lane

Site Access

Bell Portal

Wongawilli Conveyor Portal

Stormwater Control Dam Wedand

Corrimal

Princes Highway

# Health Impacts from Particulate Matter (PM10, PM2.5, ultrafine particles)



**From:** Coal combustion, coal dust, trucks, diesel trains, tankers and heavy machinery used in mining, transport and loading

## **Causes:**

- Asthma attacks
- Worsens chronic lung disease
- Increased risk of cardiovascular problems
- Contributes to lung cancer development
- Increased hospital admissions
- Increased death
- ?epigenetic changes – inheritable and impact on gene expression

**No 'safe' level of exposure without effect**

**Risk increases with concentration and duration.**



**WE ARE ONLY JUST BEGINNING TO UNDERSTAND HEALTH IMPACTS OF PM**

Source:

Peng RD et al. Emergency admissions for cardiovascular and respiratory diseases and the chemical composition of fine particle air pollution *Environ Health Perspect* 2009 117:957-63

International Agency for Research on Cancer Monographs <http://monographs.iarc.fr/ENG/Classification/ClassificationsGroupOrder.pdf> 31 Mar 2014 Accessed June

2014. Source: *Journal of Environmental Science and Health Part C*, 26: 339–362, 2008

# We welcome the additional dust control measures that appear to be included (or at least to be modeled) and further consideration of PM2.5 – But we still have questions, e.g.



\* Will an independent health expert be helping to ensure that the sampling provides a clear indication of exposure levels in living areas?

Why was the PAC recommendation for “strengthening of the monitoring and reporting systems for air quality” replaced with only “assessing predicted PM2.5 levels”?

\* Will community have timely access to data that they can translate into potential health risks? (Days they know they should ‘close the windows’ if they are ‘sensitive receptors’?)

\* Who decides what is “additional reasonable and feasible” noise and air quality mitigation measures? Why no Health Impact Assessment to identify the health losses and be guided by that?

\* Is modeling included to predict the impact of the heavily increased truck traffic on air quality for residents?

What will happen if the price of coal drops so steeply that the company ceases activity? Will they maintain these dust suppression and other maintenance measures?

# WaterNSW Principles for Managing Mining and Coal Seam Gas Impacts in Declared Catchment Areas

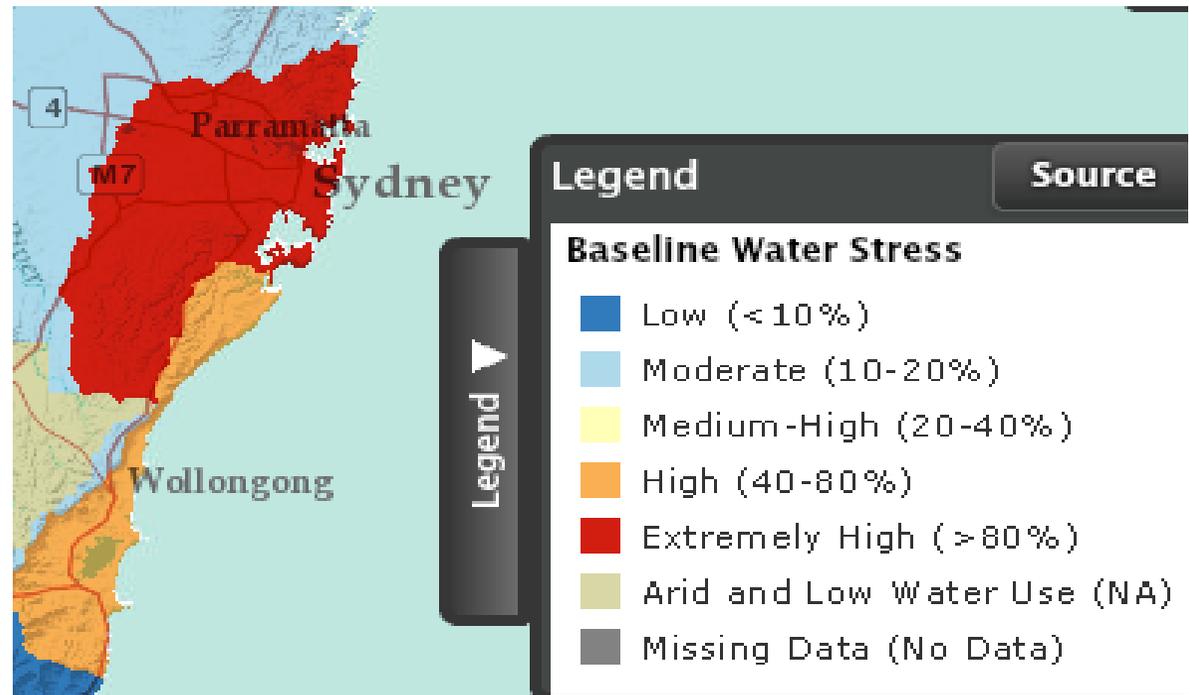
**Cumulative impacts from mining or other contaminating source activities must also be considered.** The human health risk assessment must include modelled off-site impacts for both surface and ground water contamination. Appropriate hydrological and hydrogeological expertise is expected to have contributed to each environmental and human health risk assessment.

The environmental planning assessment of major mining and coal seam gas projects should consider cumulative impacts, including impacts of past activities, the proposed project, and reasonably foreseeable projects in the area. The cumulative impact assessment should focus on other mining and coal seam gas activities in the area but also have **regard for other major activities that impact on the drinking water catchment and water supply infrastructure.**

# How safe, secure and sufficient is our water supply?

WRI modeling identified significant water stress including:

- \* high and extremely high baseline water stress (ratio of total annual freshwater withdrawals for the year 2000, relative to expected annual renewable freshwater supply based on 1950-1990 climatic norms).

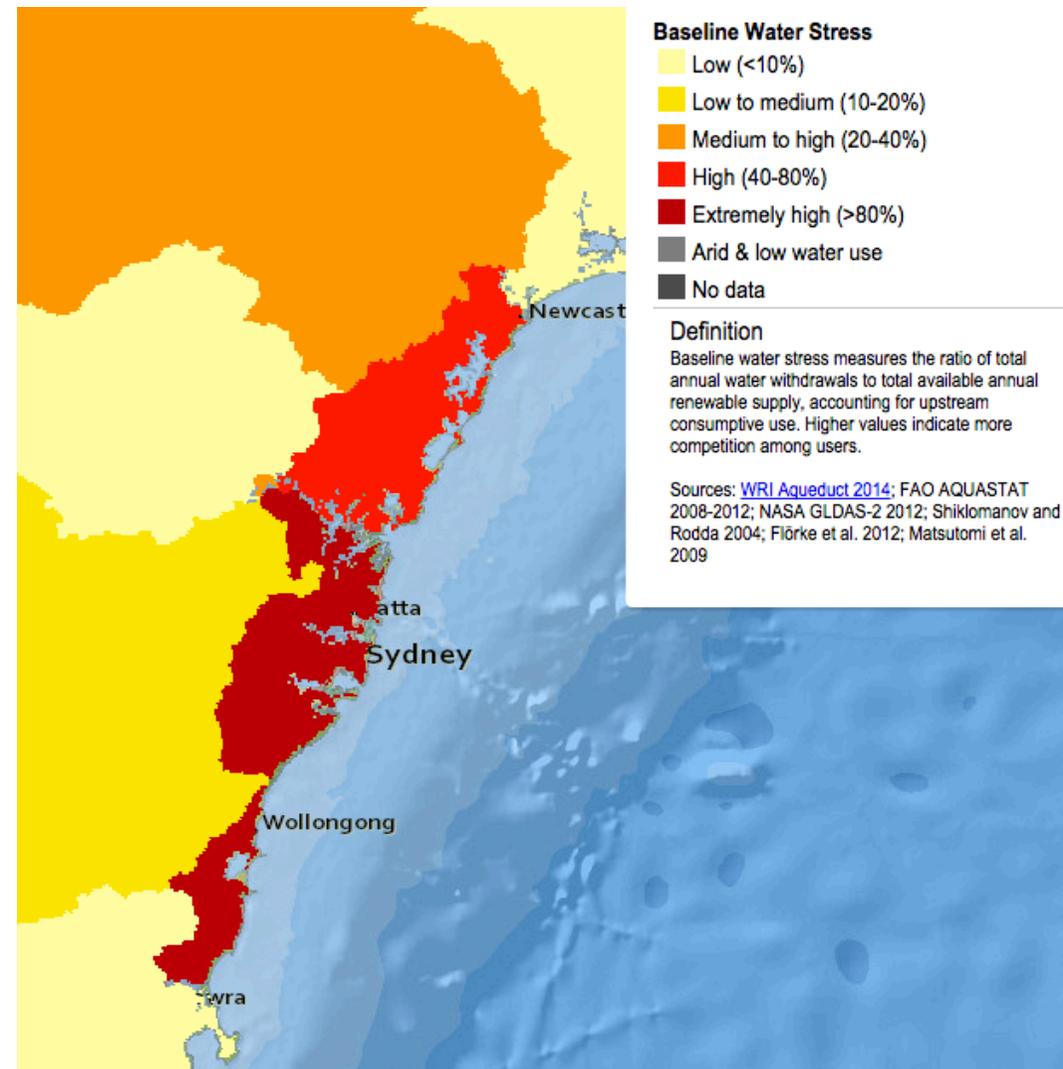


# How stressed is Sydney and Wollongong's water supply now?

(According to new estimates available in December 2015)

Updated with data from  
2008-2012

[http://www.wri.org/applications/maps/aqueduct-atlas/#x=8.00&y=0.21&s=ws!20!28!c&t=water\\_risk&w=def&g=0&i=BWS-16!WSV-4!SV-2!HFO-4!DRO-4!STOR-8!GW-8!WRI-4!ECOS-2!MC-4!WCG-8!ECOV-2!&tr=ind-1!prj-1&l=3&b=terrain&m=group](http://www.wri.org/applications/maps/aqueduct-atlas/#x=8.00&y=0.21&s=ws!20!28!c&t=water_risk&w=def&g=0&i=BWS-16!WSV-4!SV-2!HFO-4!DRO-4!STOR-8!GW-8!WRI-4!ECOS-2!MC-4!WCG-8!ECOV-2!&tr=ind-1!prj-1&l=3&b=terrain&m=group)



# Implications of population growth (>1m more people by 2036) on water supply

- \* Increased water demand
- \* Increased demand for land in catchment areas, leading to:
  - \* Run off of industrial or household chemicals, fertilisers, pesticides, and sewerage
  - \* Disruption to natural water flows and aquatic ecosystems
  - \* Erosion and increased water turbidity

Source: Water Services Association of Australia, 2010

(<https://www.wsaa.asn.au/WSAAPublications/Documents/Occasional%20Paper%2025%20Implications%20of%20population%20growth%20in%20Australia%20on%20urban%20water%20resources%20July%202010.pdf>)

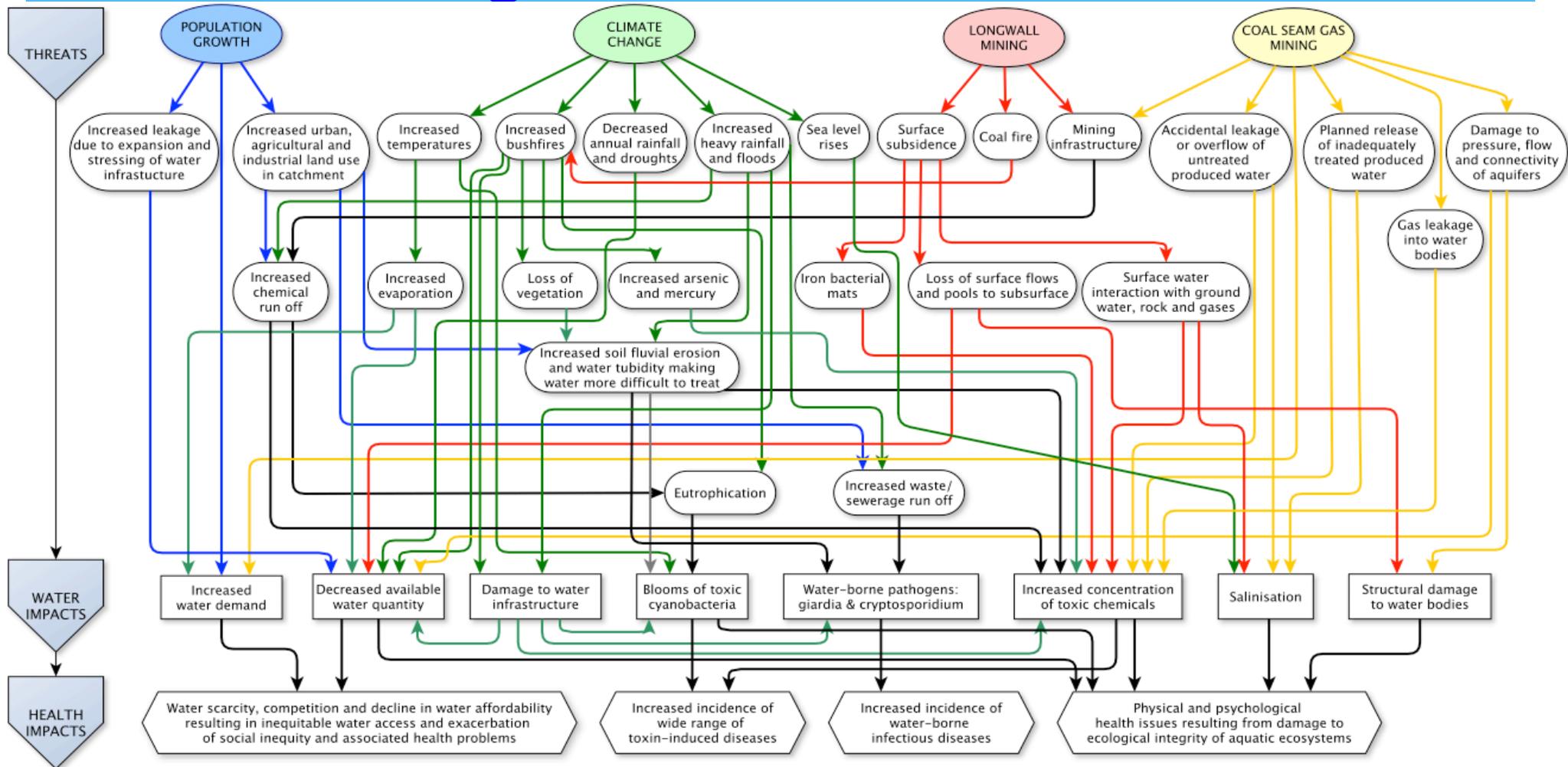
# Implications of climate change for water supply

- \* Decreases in inflows to reservoirs and reservoir water levels are expected due to:
  - \* More frequent hot and extremely hot days - increase in evaporation
  - \* Longer and more severe droughts
- \* Increases in concentration in reservoirs of heavy metals, waste, nutrients and other chemicals is expected due to :
  - \* Higher and more severe bushfire risk
  - \* More frequent heavy rainfall events and more frequent and severe flooding
- \* Increased damage to infrastructure may also occur

# Longwall mining in context

- \* Longwall mining in the Southern Coalfields takes place in a context of significant risks to the quality and quantity of our water, and these risks are predicted to increase within the next 50 years
- \* Deeming a risk low or negligible need to be taken into account with other changes happening
- \* Existing stresses are mostly out of our control, whereas the longwall mining risks are modifiable and avoidable

# An integrated, whole of catchment approach advocated by the NSW Chief Scientist and Engineer and WaterNSW



# Certainty and risk – Tipping points & Cumulative impacts NSW Chief Scientist and Engineer



*“the current cautious approach by the DSC and other government agencies appears to be preventing development that could cause obvious disastrous cumulative impact ... however there is insufficient data available to provide a deep and reliable understanding of mining in the catchment”*

*“however the (CSE) Review considers that the approaches currently in place to manage cumulative impacts are at present insufficient to reassure us that we are able to predict a tipping point of the kind described above [collapse in the ecosystem such that it can no longer provide the ecosystem services that we rely on to supply our drinking water] prior to the approval of any new activity in the Catchment”*

Who should decide on what is acceptable risk?



*“It is important to recognise that many of these issues have a value dimension – that is, the features to be protected and the level of impact to be tolerated are not items that can be identified by purely scientific enquiry. These are conversations that need to be held with the community ...”*

There are now alternatives for steel making that carry less risk and require lower temperatures.

With carbon pricing and global pledges to reduce emissions, will these begin to compete out the already falling demand for metallurgical coal?

On measuring the cumulative impacts of activities which impact ground and surface water in the Sydney Water Catchment NSW Chief Scientist & Engineer 2014

# 'Green steel' technology saves two million tyres from landfill

16 October 2014 UNSW Newsroom



'Green steel' technology invented at UNSW has achieved a major milestone, with its use in Australia preventing more than two million waste rubber tyres from ending up in landfill.

The discarded tyres – which would reach as high as the International Space Station if stacked one on top of each other – were used by OneSteel, an Arrium company, to manufacture steel in its Sydney and Melbourne facilities.

UNSW Scientia Professor Veena Sahajwalla collaborated closely with OneSteel as an industry partner to develop Polymer Injection Technology, in which old tyres and plastics provide a source of carbon to replace a significant proportion of the non-renewable coke used to make steel in electric arc furnaces.

Under an agreement with UNSW's commercialisation company, NewSouth Innovations, OneSteel has sub-licensed the technology to companies in Thailand, South Korea and the United Kingdom and has plans to further commercialise it around the globe.

"Close collaboration between OneSteel and UNSW has turned an innovative idea into a manufacturing reality. We are proud to be able to take it to the world," says Daniel Miles, Manager Steelmaking Solutions at OneSteel.

Mr Miles says Polymer Injection Technology is not only good for the environment, it has financial benefits for the steel manufacturer: "It reduces electricity consumption, lowers carbon injectant costs and delivers yield and productivity improvements."





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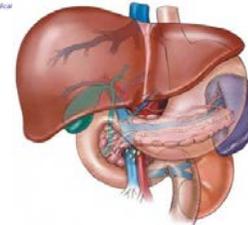
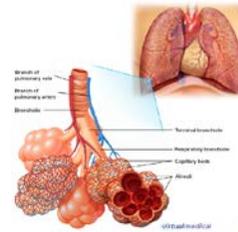
## Joint Conclusion



**Both of our organisations urge the PAC to reject this proposal, because:**

- 1 there is no denying that there are a **range of uncertainties and unresolved risks of permanent impacts** on our water catchment arising from the proposed activities
- 2 that *no avoidable* risks should be taken with the environmental infrastructure and biological resources that protect **one of our most important health and economic resources**, being our water supply,
- 3 that the Commissioners have **justification** to protect a priceless resource that serves universal community values for generations to come by saying no,
- 4 that refusing this proposal would confer **co-benefits to the climate and the respiratory and cardiovascular health and wellbeing of local residents**, especially the young, the old and people with chronic health problems.

Children are particularly vulnerable to the whole range of negative impacts from the proposed development that we have discussed: air pollution, noise, diesel exhaust, distress, water security risks and climate change -



**And have the most to gain from our decisions and commitment to win-win innovations today.**

The vulnerability, sensitivity, and resiliency of the developing embryo, infant, child, and adolescent to the effects of environmental chemicals, drugs, and physical agents as compared to the adult. *Pediatrics*, 2004, 113(Suppl.):932-1172.