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Commissioner Kevin Scarce

Thank you for providing the opportunity to comment on the Tentative Findings of the Nuclear Royal Commission

## **PROCESS ISSUES**

In regard to the process, there has been a considerable amount of pre-report discussion in the media and on the Commissions' Blog site. This discussion to date must not be regarded as informed community debate that pre-empts the findings of the Royal Commission. The concept of an informed community debate based on findings cannot start until the Commission has released its final report.

I am pleased that feedback submissions will be published on the Commission's website.

The Royal Commission is fundamentally about identifying risks and opportunities on various parts of the nuclear industry. The process of the Royal Commission is to seek evidence on identified issues, assess and analyse the evidence, and disseminate the findings in relation to the evidence collected. This Royal Commission has also sought views in relation to the industry which may reflect various perceptions about known facts. In this regard, the Royal Commission has not identified how it will deal with views, making it difficult to understand how views may have influenced findings if at all.

### **Recommendation**

**The Commissioner should identify what process has been used to accommodate views expressed about this Royal Commission. In particular, the Commissioner should identify the views that were accepted and the views that were dismissed.**

## **RESPONSES TO THE DOCUMENT**

Under the Section for the Energy Future Pg 4 Heading 9, the Tentative Findings suggest planning for a contingency to decarbonise more rapidly and asserts that it is not clear if nuclear power would be the best choice and states that it is "important that it not be precluded as an option". The tentative findings however do not present a factual basis as to why a substantial transition to near 100% renewable electricity could not be achieved. Therefore, the commission has failed to provide the relevant information required to inform community debate.

## Recommendation

**The Royal commission must present a factual case as to why near 100% renewable energy cannot be achieved, and cost comparisons in order for community debate to be informed as to whether nuclear energy should be ruled out in Australia.**

## **EXPANDED EXPLORATION, EXTRACTION AND MILLING OF MINERALS CONTAINING RADIOACTIVE MATERIALS**

Page 5 Section 11 D states that “the access of wildlife to acidified tailings—managed by the use of audio and light deterrents, and fencing”. This statement is misinformation. A royal Commission has not been doing its job if it is spreading such statements without the factual content of annual environmental impact that actually occurs.

If the Olympic Dam Mine is used as the longest running example, it has been killing hundreds, if not thousands of birds every year for decades and there is no solution in sight. The deterrents do not work. For example, from the most recent annual report against its environmental obligations the same sad news repeats performance of previous years:

### **“Fauna Activity within the TRS**

During FY14, 54 different bird species and 3 other animal species were observed during the weekly monitoring of the TRS. A total of 417 live birds were observed throughout the year and 228 dead birds were observed, while 4 live animals were observed and 11 dead animals (Figure 4.4-1), Figure 4.4-2 gives a quarterly breakdown of fauna visitation to the TRS.”

And

“The data presented indicate the number of fauna counted and do not represent total numbers. They are presented as an index only. A number of factors must be considered when interpreting and refining our monitoring and data analyses:

Birds may be seen and recorded as alive on one day and subsequently may be observed as dead. The total includes both observations, leading to a possible overestimate;

Scavenging by birds of prey and corvids means that some carcasses may be removed from the system prior to an observation being made;

Carcasses floating in the liquor may sink and disappear before being recorded; and,

Some fauna species may leave the system and die elsewhere”.

See

<https://sarigbasis.pir.sa.gov.au/WebtopEw/ws/samref/sarig1/image/DDD/MCRA2396320.pdf>

## THE FURTHER PROCESSING OF MINERALS AND THE PROCESSING AND MANUFACTURE OF MATERIALS CONTAINING RADIOACTIVE AND NUCLEAR SUBSTANCES

Under Section 24, Pg 8, the Tentative Findings consider whether enrichment processing is safe and state that “In conversion and enrichment facilities, uranium hexafluoride is a toxic, volatile solid, and is harmful if directly inhaled”. This section is selective by not outlining the escalation of management required to contain enriched stages and the ultimate fuel products. The Royal Commission has not included the factual reality that once enriched to towards more concentrated uranium fuels and any mixed oxide fuels, become inherently catastrophic, and must be managed in a way that prevents proximity with other fuel products that would cause fission acceleration and meltdown.

### Recommendation

**The Royal Commission should acknowledge the factual reality that enriched uranium fuel is inherently catastrophic which is why it needs to be managed with utmost success 100% of the time.**

Section 24 refers to the risky process of fuel reprocessing “with two overseas facilities experiencing significant operational difficulties”. The Royal Commission should remind itself that there will be a public debate based on the content of this findings report. Where “operational difficulties” actually mean death, injury and the complete failure and closure of facilities, it should make this unambiguously clear.

Presumably, one of these facilities was the Tokai nuclear fuel plant in Japan where workers had mixed up too much uranium oxide powder with nitric acid and liquid ammonia, creating an ongoing criticality release which lasted for 24 hours. The workers most affected suffered horrible deaths, with one worker taking 52 days to die, and another taking 205 days to die. A further 119 people were exposed to varying amounts of more than 1 milli Sievert of radiation and 667 people in total were exposed to radiation from the accident.

It took this accident and deaths to occur, before it was identified that officials at the plant were negligent, that Japan's nation's nuclear regulations law had been violated, and that training, procedures and equipment were inadequate.

It is interesting to note that after this accident, uranium reprocessing operations at the Tokai nuclear processing facility were abandoned.

The Royal Commission should be open and transparent when it talks about “operational difficulties” and should acknowledge and describe the type of injuries experienced by the two workers that died at Tokai, and what it must have been like to be killed with a fatal dose of nuclear fission exposure, and then endure such a prolonged and painful process to die.

## THE USE OF NUCLEAR FUELS FOR ELECTRICITY GENERATION

Section 42 on page 11 contains a factual oversight in how it refers to the catastrophic failures of reactors to date. The Tentative Findings make the reassuring claim that “The lessons learned from the design, siting and cultural factors that contributed to these accidents have been applied to new developments” The Nuclear Royal Commission fails to acknowledge that the vast majority of the 230 or so reactors are not new facilities but are a variety of aging and unsafe facilities. Australia does limit its role in the nuclear industry to

just new reactors above a certain safety standard and is content to allow its uranium to be used in aging boiling water reactors, just as it was content that its fuel may have ultimately been used at the Fukushima reactors.

### **Recommendation**

**The Royal commission should clarify that its role in the nuclear industry extends to providing uranium towards and potentially accepting waste from mostly older and less safe reactors.**

In addition, there is a factual difficulty with the logic of the Royal Commission in confusing decades of operation with maturity and safety. The Fukushima power plant for example was a ticking time bomb as soon as it was commissioned, yet this did not become apparent until the inevitable tsunami knocked out power and backup power and cooling systems. It was never mature and never safe.

The best comparison with other sectors could be made by considering the aviation industry. Contemporary passenger planes are full of safety aids yet sadly it is still all too simple to crash a plane, to put tape across Pitot tube intakes by accident, to leave an air pressurisation switch turned off, or to make human mistakes in difficult landings. The consequences of crash can be the loss of hundreds of lives. When there is a crash, there are detailed investigations which generally find out what went wrong and what lessons can be learned. However, no one is suggesting that planes won't crash again in the future.

Back to the nuclear industry, there will be thousands of minor incidents and leaks of various kinds and there will be more catastrophic explosions and meltdowns that will release radiation over large parts of the planet, also requiring the evacuation of entire cities and regions as has happened at Chernobyl and Fukushima.

It is absolute nuclear industry nonsense for the Royal Commission to present findings as "16 000 continuous years of nuclear power plant operation in 33 countries". Instead the Nuclear Royal Commission should acknowledge failures in reference to the actual 430 or so reactors with a major failure and/or catastrophe occurring every fifteen years. This is the reality that communities need to understand in order to participate in an informed debate.

### **Recommendation**

**The Nuclear Royal Commission should not liken failure across 430 reactors to a single reactor in operation for a given number of years and instead should acknowledge failures in reference to the 430 or so reactors with a major failure and/or catastrophe occurring every fifteen years. This is the reality that communities need to understand in order to participate in an informed debate**

It is not for the Nuclear Royal Commission to decide that "The risk of nuclear accident should not of itself preclude consideration of nuclear power as a future electricity generation option". This is a matter for the community to decide based on full and relevant information that must be provided by the Royal Commission.

The Royal Commission also has a duty to inform on the economic risks that will result from South Australia/Australia increasing its exposure to the inevitable collapse in the nuclear

sector that occurs following each catastrophic nuclear failure, and compare this risk with say each complete failure of a wind turbine or solar panel.

Section 51 page 12 suggests that an investigation of small and large scale nuclear power is required together with renewables and battery storage. However, the Royal Commission fails to convey a scenario where the investigations would consider near 100% renewables with preclusion of nuclear power because of its inherently catastrophic nature and the risk of nuclear investment stifling the transition to renewables.

### **Recommendation**

**The Royal commission should not choose only nuclear scenarios in providing a foundation for community debate**

## **THE ESTABLISHMENT OF FACILITIES FOR THE STORAGE AND DISPOSAL OF RADIOACTIVE AND NUCLEAR WASTE.**

The Royal Commission has described only one type of fuel in its portrayal of high level waste. If new types of reactors are using different fuel arrangements then the full range of waste fuel structures should be outlined.

As the need for isolation from other parts of the environment and community extends for hundreds of thousands of years, then the asset life of the disposal facility and its funding should continue over hundreds of thousands of years.

Unfortunately, it becomes apparent the business case will fail when considered across this timeframe. The revenue potentially raised is essentially a once of cash grab leaving an unfunded dangerous legacy for all future generations that will hope to survive over the next few hundred thousand years. It is also obvious that these future generations cannot be asked as to whether this is the legacy that they want.

If the Aboriginal community is not supportive of the waste proposal then the waste disposal facility should not proceed. This is their land more than it is of post European settlers, particularly for such a lasting decision.

Page 16, Section 78 D refers to “a mature and stable political, social and economic structure” just after describing Australia’s geological stability. This is like comparing a second with a decade. When compared against 200,000 years Australia’s political stability is a nonsense concept. In addition, taking the world’s nuclear waste and hoping for political, economic and social stability must also consider the political, economic and social stability of the planet as a whole. Over the past 4,000 years, human beings have an absolutely atrocious record of such stability. There is no current global stability and little prospect of global stability being achieved over the next 200,000 years.

### **Recommendation**

**The Royal Commission should acknowledge the factual irrelevance of local decadal political stability compared against the long term political instability of human civilisations and the requirement to oversee the waste facility for hundreds of thousands of years.**

Page 16, Section 78 e talks about “pre-existing sophisticated frameworks for securing long-term agreement with rights holders and the broader community”. Factually, this statement is nonsense as there have been no frameworks that can secure a multi-generational agreement over hundreds of thousands of years. There is simply no way to have the agreement with future generations which is a core challenge with this industry.

The use of the adjective ‘sophisticated’ is not professional language expected in findings of a Royal Commission. This is simply bias to make frameworks sound more convincing.

### **Recommendations**

**The final findings should discuss in more detail how high level waste will be managed in deep underground storage which in all likelihood will be below and submerged within underground water systems**

**The findings should inform communities as to how failures will be detected and managed within backfilled areas**

**The Royal Commission should alert South Australians to the potential loss of control and sovereign risks to store high level nuclear waste. As soon as the state or federal governments sign agreements to take medium and high level waste from other countries, there is no way to withdraw from managing this waste in our state for hundreds of thousands of years.**

Thankyou again for the opportunity to provide feedback on areas of fact and to seek clarity on how views are being taken into account. I look forward to seeing that these matters that I have identified are addressed in the final findings document. I trust that the final document will be more impartial and provide the full range of alternatives to nuclear industries, in order for the South Australian government and the community to engage and debate in an informed manner.

Kind regards

Tim Kelly