



# Centre for Environmental Rights

Advancing Environmental Rights in South Africa

## Gabriele Stein

Public Participation and Social Consultant  
Savannah Environmental (Pty) Limited  
1<sup>st</sup> Floor, Block 2  
5 Woodlands Drive Office Park  
Woodmead  
Johannesburg 2191  
By email: [gabriele@savannahsa.com](mailto:gabriele@savannahsa.com)

## Copies to:

### Sabelo Malaza

Chief Director: Integrated Environmental Authorisations  
Department of Environmental Affairs  
By email: [smalaza@environment.gov.za](mailto:smalaza@environment.gov.za)  
[sdlamini@environment.gov.za](mailto:sdlamini@environment.gov.za)

### Ziyaad Hassam

Director: Appeals and Legal Review  
Department of Environmental Affairs  
By email: [zhassam@environment.gov.za](mailto:zhassam@environment.gov.za)  
[Appealsdirector@environment.gov.za](mailto:Appealsdirector@environment.gov.za)

DEA ref: 14/12/16/3/3/3/40

Our ref: CER12.4/RH

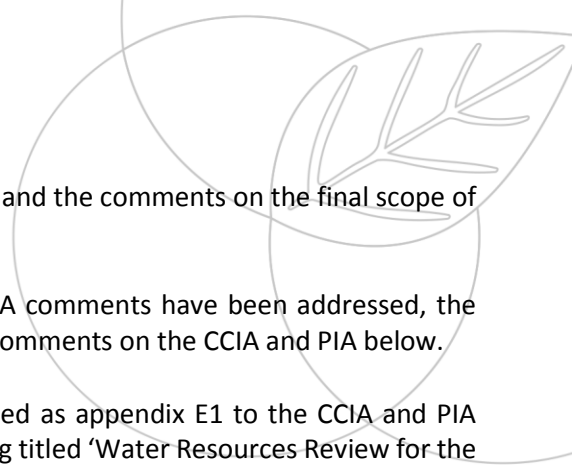
31 July 2017

Dear Madam

## COMMENTS ON THE FINAL CLIMATE CHANGE IMPACT ASSESSMENT AND PALAEOLOGICAL IMPACT ASSESSMENT REPORTS FOR THABAMETSI IPP COAL-FIRED POWER STATION (DEA REF 14/12/16/3/3/3/40)

1. We refer to the notification of 30 June 2017 in terms of which interested and affected parties (I&APs) – including our client, Earthlife Africa Johannesburg (“our client”) - were notified of the availability for comment of the climate change impact assessment (CCIA) and palaeontological impact assessment (PIA) for the independent power producer (IPP) Thabametsi coal-fired power station (“Thabametsi”) proposed by Thabametsi Power Company (Pty) Limited.
2. On 27 February 2017, our client submitted comments on Thabametsi’s draft CCIA and PIA (“draft CCIA and PIA comments”), which were made available for public comment on 27 January 2017, attached hereto (for your ease of reference) marked “1” and “1A”. Our client stands by its draft CCIA and PIA comments, and the submissions made herein simply stand to supplement those comments, in addition to our client’s comments on the draft scope

2<sup>nd</sup> Floor, Springtime Studios,  
1 Scott Road, Observatory, 7925  
Cape Town, South Africa  
Tel 021 447 1647, Fax 086 730 9098  
Email [info@cer.org.za](mailto:info@cer.org.za), [www.cer.org.za](http://www.cer.org.za)



of work report (DSR) for the CCIA of 25 May 2016 (“the DSR comments”) and the comments on the final scope of work report of 10 November 2016 (“the FSR comments”) for the CCIA.<sup>1</sup>

3. While some of our client’s concerns as set out in the draft CCIA and PIA comments have been addressed, the majority of these concerns still remain. We set out our client’s detailed comments on the CCIA and PIA below.
4. We note that a new specialist report appears now to have been included as appendix E1 to the CCIA and PIA summary report prepared by Savannah (“the summary report”); this being titled ‘Water Resources Review for the 1200MW Thabametsi Coal-Fired Power Station in Lephalale Limpopo Province’ (“the water resources report”). We comment on this report below.
5. The summary report appears to separate the climate resilience assessment from what is referred to as the climate study or climate change impact assessment. It is our understanding that the resilience assessment forms, and must form, part of the CCIA. Kindly confirm if this is not the case.
6. We address and set out below our comments on the CCIA and PIA.

#### **Our client’s submissions on the CCIA**

7. It is our understanding that the final CCIA is comprised of the following reports by Environmental Resources Management (ERM):
  - 7.1. Greenhouse Gas (GHG) Assessment for the 1200MW Thabametsi Coal-Fired Power Station (“GHG report”);
  - 7.2. Climate Resilience Assessment for the 1200MW Thabametsi Coal-Fired Power Station (“CRA report”);
  - 7.3. the water resources report (referred to above); and
  - 7.4. the relevant sections of the summary report dealing with climate change impacts.
8. We emphasise again that the CCIA must consider several aspects of the relationship between the proposed Thabametsi project and climate change, including:
  - 8.1. the project’s direct impacts on climate change. In addition to simply considering the extent of GHG emissions to arise from the project, this must include as assessment of: indirect and full life-cycle emissions; cumulative emissions; and the environmental and social cost of the GHG emissions;
  - 8.2. the ways in which the effects of climate change will impact on the project, including the effect on the water resources necessary for the project and the likelihood of the project being unable to operate – or at least to operate sub-optimally - for its full expected lifespan; and
  - 8.3. how predicted climate change effects on the environment and society – at both national level and at the scale of Lephalale - will be aggravated by the project’s impacts. This would include the ways in which Thabametsi would impact on South Africa, and particularly Lephalale’s own capability of adapting to a changed climate – exacerbating the vulnerability of the environment and communities to the impacts of climate change. This is a particularly fundamental consideration, which has not been given adequate consideration in the CCIA, as will be explained more clearly below.
9. We point out, and you will be aware, that since the publication of the draft CCIA, the case of *Earthlife Africa Johannesburg v the Minister & Others* in relation to this, the Thabametsi power station project and its environmental authorisation (EA) (“the Thabametsi case”), was heard in the Pretoria High Court in March 2017. Judgment (“the Thabametsi judgment”) was handed down by Judge John Murphy on 8 March 2017. The court

---

<sup>1</sup> You have copies of these comments, but please advise if you would like us to make copies available to you.

found in favour of our client, reviewing and setting aside the Minister's decision on our client's appeal of Thabametsi's EA, in relation to the climate change ground of appeal. The Minister was ordered to reconsider our client's appeal in light of the CCIA and any public input thereon.

10. Some statements in the Thabametsi judgment, which are of relevance to the CCIA comments, include:

- 10.1. *"Climate change poses a substantial risk to sustainable development in South Africa. The effects of climate change, in the form of rising temperatures, greater water scarcity, and the increasing frequency of natural disasters pose substantial risks. Sustainable development is at the same time integrally linked with the principle of intergenerational justice requiring the state to take reasonable measures to protect the environment "for the benefit of present and future generations" and hence adequate consideration of climate change. **Short-term needs must be evaluated and weighed against long-term consequences**" (emphasis added);<sup>2</sup>*
- 10.2. *"...the power station will require 1,500,000m<sup>3</sup> of water each year in a highly water stressed region and hence is **likely to aggravate the impact of climate change in the region by contributing to water scarcity, raising in turn questions about the viability of the power station over its lifetime**. Climate change thus poses risks to the Thabametsi coal-fired power station over its lifetime" (emphasis added);<sup>3</sup>*
- 10.3. *"... [t]he EIR made no attempt to consider how climate change may impact on the power station itself over its lifetime **and how this power station may aggravate the effects of climate change**. The resilience report confirms that climate change in fact poses several "high risks" that cannot be effectively mitigated, most significant being the threat of increasing water scarcity in the Lephalale district. **Increasing water scarcity in the region will affect the operation of the plant and deprive local communities of water**" (emphasis added);*
- 10.4. *"A climate change impact assessment is necessary and relevant to ensuring that the proposed coal-fired power station fits South Africa's peak, plateau and decline trajectory as outlined in the [nationally determined contribution] and its commitment to build cleaner and more efficient than existing power stations";<sup>4</sup>*
- 10.5. *"A climate change impact assessment in relation to the construction of a coal fire (sic) power station ordinarily would comprise an assessment of (i) the extent to which a proposed coal-fired power station will contribute to climate change over its lifetime, by quantifying its GHG emissions during construction, operation and decommissioning; (ii) the resilience of the coal-fired power station to climate change, taking into account how climate change will impact on its operation, through factors such as rising temperatures, diminishing water supply, and extreme weather patterns; and (iii) **how these impacts may be avoided, mitigated, or remedied**" (emphasis added);<sup>5</sup>*
- 10.6. *"In conclusion, therefore, the legislative and policy scheme and framework overwhelmingly support the conclusion that an assessment of climate change impacts and mitigating measures will be relevant factors in the environmental authorisation process, and that consideration of such will **best be accomplished by means of a professionally researched climate change impact report**" (emphasis added);<sup>6</sup> and*

---

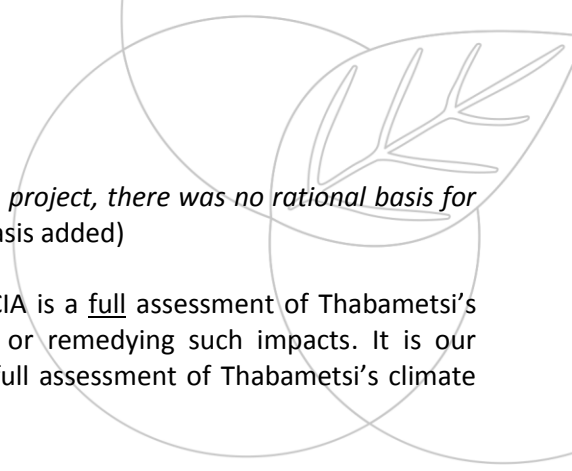
<sup>2</sup> Para 82, Thabametsi judgment.

<sup>3</sup> Para 44, Thabametsi judgment.

<sup>4</sup> Para 90, Thabametsi judgment.

<sup>5</sup> Para 6, Thabametsi judgment.

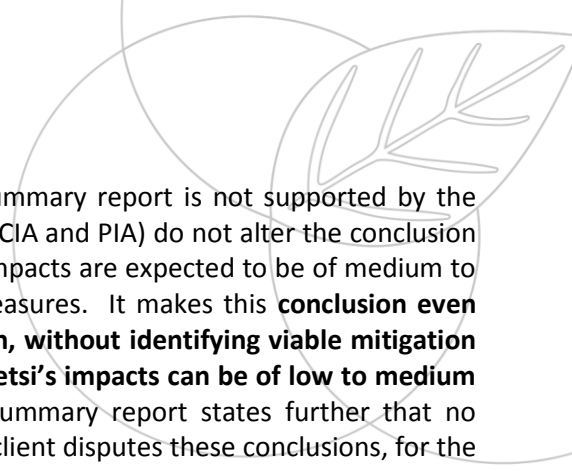
<sup>6</sup> Para 91, Thabametsi judgment.

- 
- 10.7. *“Without a **full assessment** of the climate change impact of the project, there was no rational basis for the Chief Director to endorse these baseless assertions.”<sup>7</sup> (emphasis added)*
11. It is clear from the Thabametsi judgment that what is required of a CCIA is a full assessment of Thabametsi’s climate change impacts, and of alternatives for avoiding, mitigating, or remedying such impacts. It is our submission that the CCIA, as it currently stands, falls short of being a full assessment of Thabametsi’s climate impacts.
12. The Comments and Responses Report (“C&R report”), appendix C6 to the summary report, states – in response to our submissions regarding issues which still needed to be assessed in the CCIA - that, *“the applicant is ... not obliged by law or required by the DEA (Department of Environmental Affairs), to include issues which are beyond the ambit of the approved Scope of Work. The content of the CCIA report, is consistent with the approved Scope of Work and adequately addresses the impacts of all project phases on climate change. However and notwithstanding the approved Scope of Work, the applicant, through its CCIAR, has also taken into consideration the points raised by the CER on behalf of Earthlife and has extended the Scope of Work (without any obligation in law to do so) and addressed them to the extent it is able to do so within the context and within the information available to its advisors, as set out below.”<sup>8</sup>*
13. As submitted above, based on the Thabametsi judgment and the submissions below, the final CCIA still falls short in many respects, irrespective of what was approved in the Scope of Work and its extension referred to above. Our client’s DSR comments and FSR comments also made clear that the scope of the CCIA needed to be broadened to, at least, include an **assessment of the social and environmental costs of Thabametsi’s GHG emissions** and the **ways in which the power station will exacerbate the project area’s vulnerability to the impacts of climate change**. We make more detailed submissions on this below.
14. The shortcomings and main concerns with the draft CCIA were highlighted in the draft CCIA and PIA comments as being:
- 14.1. that the plant’s GHG emissions had been incorrectly calculated and were significantly underestimated;
  - 14.2. the failure to consider the social cost of the GHG emissions associated with Thabametsi;
  - 14.3. the failure to consider how the project’s impacts will exacerbate the effects of climate change in the project area, and how these net changes will impact on the communities and the environment;
  - 14.4. the failure to give full consideration to the water scarcity issue in the Waterberg, in considering the risks to the project as part of the CRA report; and
  - 14.5. the lack of effective recommendations in the draft CCIA to address the significant impacts.
15. We note some of the following changes to the final CCIA:
- 15.1. the recalculation of Thabametsi’s projected GHG emissions to include other GHGs in addition to carbon dioxide (CO<sub>2</sub>);
  - 15.2. the increase in the projected GHGs to be emitted by Thabametsi, as well as changes in relation to Thabametsi’s GHG emission intensity (GHG emissions per unit of power sent out into the grid); and
  - 15.3. the addition of the water resources report.
16. While some of the shortcomings in the draft CCIA have been addressed – and we again commend the efforts to assess Thabametsi’s climate impacts more thoroughly - we outline below, our client’s concerns and the areas where the final CCIA still fails to meet the requirements of a full CCIA as required by the Thabametsi judgment.

---

<sup>7</sup> Para 101, Thabametsi judgment. The “baseless assertions” to which reference is made are the statements in Thabametsi’s EIR - on which the Chief Director relied exclusively - that the climate change impacts of the project were relatively small and low.

<sup>8</sup> P3, C&R report.

- 
17. We note further, and with concern, that the final conclusion of the summary report is not supported by the evidence gathered in the CCIA. It finds that the additional studies the (CCIA and PIA) do not alter the conclusion from Thabametsi's original environmental impact report (EIR) that the impacts are expected to be of medium to low significance with the implementation of appropriate mitigation measures. It makes this **conclusion even though the impact rating for climate change in the CCIA reports is high, without identifying viable mitigation measures, and without providing any justifiable basis for why Thabametsi's impacts can be of low to medium significance when the climate change impacts are significant**. The summary report states further that no environmental fatal flaws were identified.<sup>9</sup> We place on record that our client disputes these conclusions, for the reasons set out below.
18. We state upfront, that with the recalculation of Thabametsi's projected emission intensity, once three of Eskom's oldest plants (Camden, Komati, and Grootvlei) are decommissioned,<sup>10</sup> **Thabametsi will be the highest GHG emitter in South Africa**, with an emission intensity 60% higher than Eskom's new Medupi and Kusile coal plants. Not only will Thabametsi be a significant contributor to GHG emissions nationally, but also internationally. With an emission intensity of 1.23 tons of carbon dioxide equivalent (CO<sub>2</sub>e) per megawatt hour (MWh) – which is in a very high range, globally - it will be **one of the highest GHG emitters in the world**.<sup>11</sup>
19. We address below, the following:
- 19.1. Thabametsi's GHG emissions and emissions intensity;
  - 19.2. the failure to calculate the social and environmental cost of Thabametsi's GHG emissions;
  - 19.3. Thabametsi's resilience to climate change;
  - 19.4. the failure to consider how Thabametsi will exacerbate the impacts of climate change for impacted communities and the environment; and
  - 19.5. the lack of adequate mitigation measures – and, in the absence thereof, more robust recommendations regarding alternatives to the Thabametsi plant, including the no-go option.
20. We also make submissions below on the lawfulness of the Thabametsi project in light of the impacts as shown in the final CCIA.

#### Thabametsi's GHG emissions & emission intensity

21. We note that both the estimated **total annual GHG emissions for Thabametsi and the plant's estimated GHG emission intensity are significantly higher** than previously reported in the draft CCIA. The total emissions calculated in the draft CCIA were 8 191 067 (8.2 million) tons of CO<sub>2</sub> equivalent (CO<sub>2</sub>e) per year, during Thabametsi's operational phase. The total estimated emissions now under the final CCIA are **9 879 522 (9.9 million) tons of CO<sub>2</sub>e per year**.
22. The GHG emission intensity has gone up to **1.23 tons of CO<sub>2</sub>e per MWh**. This figure was previously – in the draft CCIA – 1.02 tons of CO<sub>2</sub>e per MWh.
23. We note further that the final CCIA now accounts for GHG emissions other than, and in addition to, CO<sub>2</sub> – as per our recommendation in the draft CCIA and PIA comments. The additional emissions calculated are for nitrous oxide (N<sub>2</sub>O) and methane (CH<sub>4</sub>), expressed as equivalent CO<sub>2</sub> emissions (CO<sub>2</sub>e).<sup>12</sup>

---

<sup>9</sup> P32, summary report.

<sup>10</sup> These three plants have similar GHG emission intensities to Thabametsi.

<sup>11</sup> See p19, 'IPCC Special Report: Renewable Energy Sources and Climate Change Mitigation', available at [https://www.ipcc.ch/pdf/special-reports/srren/SRREN\\_FD\\_SPM\\_final.pdf](https://www.ipcc.ch/pdf/special-reports/srren/SRREN_FD_SPM_final.pdf). Figure SPM.8 estimates of lifecycle GHG emissions for broad categories of electricity generation technologies, including coal. When Thabametsi's GHG emission values are compared with this graph, it is evident that Thabametsi is well outside the 25 to 75% percentile distribution, in the tail high end. Thabametsi's emission intensities would be amongst the highest in the world, old or new.

<sup>12</sup> Tables 0.2, 4.3 and 4.8, GHG Report.

- 
24. The calculation of indirect value chain (scope 3) emissions associated with embedded carbon in construction materials was not included as part of the overall construction emissions for the project. These emissions were estimated as being 37 745 tons of CO<sub>2</sub>e.<sup>13</sup> Although this is a relatively small portion of total emissions, it is a gap which should not have been overlooked.
25. Furthermore, the CCIA has not considered the GHG emissions from the mines that will supply Thabametsi with coal, in its calculation of Thabametsi's indirect emissions. We have always maintained that these indirect GHG emissions – which are directly linked to Thabametsi's operations – must be considered and assessed as part of the CCIA. This must be addressed and these GHG emissions must also be accounted for in the CCIA. A failure to do so results in an incomplete assessment of indirect emissions.
26. A consequence of the now correctly-calculated GHG emission intensities for Thabametsi is that the life-cycle emissions are higher than previously estimated in the draft CCIA. This means that the **proportional percentage contribution to South Africa's projected total GHG emissions is approximately 21% higher** than previously estimated – with the previous estimate of 246<sup>14</sup> million tons (or Mt (megatons)<sup>15</sup>) CO<sub>2</sub>e now being increased to **297<sup>16</sup> million tons of CO<sub>2</sub>e (296 651 114 tons CO<sub>2</sub>e) over Thabametsi's anticipated lifetime, including from construction, operation and decommissioning.**
27. It should also be noted that these **projections of future GHG emissions are optimistic** with respect to the plant's future GHG emissions intensity; they represent an underestimate, as they **assume that the plant will operate optimally throughout its 30 year life.** The CCIA itself expresses reservations about this optimistic assumption: *"[t]he Feasibility Study notes that the plant will be operated according to a base-load operating regime for the first 10 years, after which the load profile could change, either becoming load following, weekend shut downs or two-shifting, depending on the dispatch rules at the time. Whilst noting that any reduction in the operating time or load factor (i.e. annual power generation in MWh) is likely to result in decreased total annual emissions from the plant, such changes to cycling philosophies could have an adverse impact on thermal efficiency and GHG intensity per MWh generated as a result of increased start-ups and wear and tear on the plant."*<sup>17</sup>
28. In the draft CCIA, it was argued that Thabametsi's CO<sub>2</sub>e emission intensity was similar to the Eskom average – then stated in the draft CCIA as being 1.01 tons CO<sub>2</sub>e per MWh<sup>18</sup> - now stated (in the final CCIA) as 1.05 tons CO<sub>2</sub>e per MWh. In fact, the GHG emissions intensity of the proposed Thabametsi plant, now properly calculated, is **significantly greater (by 17%)<sup>19</sup> than the average emissions intensities of Eskom's current fleet of coal power stations.** In other words, the Thabametsi plant would, as a new plant from a GHG emission perspective, be even more polluting than coal plants already in existence.
29. The final CCIA attempts to distract from Thabametsi's high GHG emissions intensity by claiming that the plant's emissions intensity would be lower than that of five old Eskom plants, which are the first of Eskom's power stations scheduled for decommissioning,<sup>20</sup> namely Camden, Hendrina, Komati, Grootvlei and Kriel. This argument, however, is not valid. This is mainly because:

---

<sup>13</sup> P45, GHG report.

<sup>14</sup> 245 997 465 tons CO<sub>2</sub>e rounded off, p41, draft GHG report.

<sup>15</sup> Which amounts to one million tons.

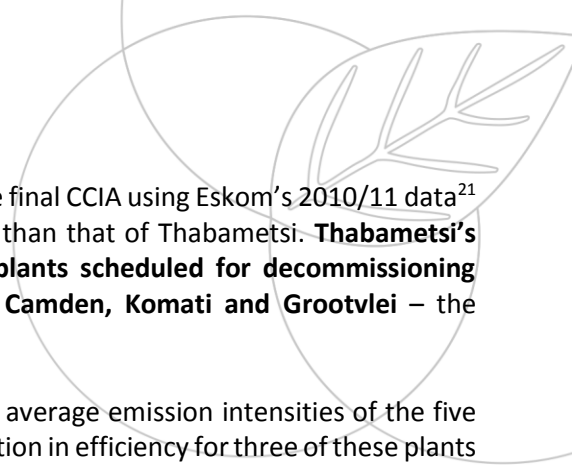
<sup>16</sup> Table 0.1, GHG report, rounded to 297 million.

<sup>17</sup> P66, GHG report.

<sup>18</sup> P2, draft GHG report.

<sup>19</sup> Thabametsi's GHG (CO<sub>2</sub>e) emissions intensity is 17% higher (1.23/1.05=1.17) than the average of Eskom's current coal-fired plants, higher than two of the five plants scheduled for decommissioning (Hendrina and Kriel) and approximately equal to that of Camden, Komati and Grootvlei. This calculation is based on last column figures in table 0.2 of the GHG Report: (Thabametsi GHG emission intensity/ Eskom average) = 1.23/1.05=1.17.

<sup>20</sup> P71, GHG report.

- 
- 29.1. the average current GHG emissions intensity, calculated in the final CCIA using Eskom's 2010/11 data<sup>21</sup> of the five Eskom plants mentioned above is, in fact, lower than that of Thabametsi. **Thabametsi's emission intensity is higher than two of the five Eskom plants scheduled for decommissioning (Hendrina and Kriel) and approximately equal to that of Camden, Komati and Grootvlei – the remaining three; and**
- 29.2. the calculations in the GHG report regarding the anticipated average emission intensities of the five Eskom plants in 2021/22 assume that there will be a deterioration in efficiency for three of these plants – Hendrina, Grootvlei and Kriel. This is unconvincing, because it assumes that Eskom's poor maintenance practices during the period 2009/10 to 2013/14 would continue to 2021/22.<sup>22</sup>
30. We therefore dispute the conclusion in the GHG report that Thabametsi's emissions are of a similar, but slightly lower magnitude than those of the five Eskom plants mentioned above.<sup>23</sup> Even if this assumption is accepted, the average emissions intensity of the five plants, in 2021/22, would be only marginally higher - at 1.28 tons of CO<sub>2</sub>e per MWh - compared with Thabametsi's 1.23 tons CO<sub>2</sub>e per MWh. It can therefore be accepted that **Thabametsi's GHG emissions will be similar to, if not worse than, Eskom's five oldest and soon-to-be decommissioned plants.**
31. The CCIA explains that the choice of technology for Thabametsi – namely circulating fluidised bed (CFB) - is attributed to, *inter alia*: the limited water available in the Waterberg area where Thabametsi will be located – as a dry-cooled plant, Thabametsi will apparently require 15 times less water than a wet-cooled plant;<sup>24</sup> and the requirements and specifications of the Coal Baseload Independent Power Producers Procurement Programme (CBIPPPP) Requirements, which set a tariff cap of R0.82 per KWh and allow for the use of low-grade coal, which in turn, influenced the choice of boilers.<sup>25</sup> The GHG report notes that, from a GHG emissions perspective, CFB technology is “currently limited” in comparison with pulverised coal combustion technology.<sup>26</sup> CFB technology also emits a significant amount of N<sub>2</sub>O<sup>27</sup> – a GHG which previously, in the draft CCIA, was not accounted for.
32. In short, the CFB technology proposed for Thabametsi means that the plant will be **significantly worse in terms of GHG emissions than existing and older coal plants, and only about the same as the oldest sub-critical Eskom units.** As a new plant – which should be comparable with other new coal plants – **Thabametsi will be 60% worse than Eskom's new Medupi and Kusile power stations, from a GHG emission intensity perspective.** So while Thabametsi is clearly not 'newer and better', it is, notably, **much worse than South Africa's existing GHG emitters,** which already significantly contribute to the country's GHG emissions.<sup>28</sup>
33. In any event, as mentioned above, instead of comparing Thabametsi with existing and old coal, the CCIA should be comparing Thabametsi's GHG emissions and emission intensity to GHG emissions from other energy resources from renewable energy – which do not have the same GHG emissions or high climate impacts - in order to determine whether locking South Africa into a high carbon intensity fuel for the next 30 or more years is in the public interest.

---

<sup>21</sup> Table 0.2, second column of emission intensities.

<sup>22</sup> See table 0.2 of the GHG Report. The proposed Thabametsi GHG (CO<sub>2</sub> eq) emissions intensity of 1.23 tCO<sub>2</sub> eq/ MWh should, in the first instance, be compared with the figures in the second column of Table 0.2. (The first and third columns, of CO<sub>2</sub> only emissions intensities, is not relevant to a comparison of total GHG emissions intensities).

<sup>23</sup> P7, GHG report.

<sup>24</sup> P56, GHG report.

<sup>25</sup> P56, GHG report.

<sup>26</sup> P56, GHG report.

<sup>27</sup> 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Chapter 2, Table 2.6, p2.25. Available at [http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2\\_Volume2/V2\\_2\\_Ch2\\_Stationary\\_Combustion.pdf](http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf).

<sup>28</sup> Electricity generation (predominantly from Eskom's coal-fired power stations) accounts for approximately 55.1% of carbon dioxide equivalent of South Africa's total accumulated GHG emissions. See Department of Environmental Affairs' Greenhouse Gas Inventory for South Africa 2000 – 2010, p73.

34. It is clear that Thabametsi would neither improve nor reduce South Africa's high GHG emissions – on the contrary, it will prolong South Africa's poor emissions intensity during the plant's 30 year operational life. If Thabametsi's power is **used to replace old Eskom plants once decommissioned**, there will **essentially be no benefit in terms of an overall reduction in SA's GHGs**, per unit of power generated.

#### The social and environmental costs of Thabametsi

35. We note that the final CCIA does not attempt to quantify the external cost of Thabametsi's climate change impacts.

36. In our previous comments, we have referred to the United States (USA) social cost of carbon protocol for assessing climate impacts - which is intended to be a comprehensive estimate of climate change damages – as a potential guide to determining the external costs of Thabametsi.

37. In the draft CCIA and PIA comments, we pointed out that it was vital that the external social and environmental costs of Thabametsi's GHG emissions be factored into the assessment of the project's climate change impacts, or at least into the assessment of the financial feasibility of the project, given the National Environmental Management Act, 1998 (NEMA) principle that the 'polluter' must 'pay' for damage and/or environmental degradation.<sup>29</sup>

38. The C&R report states that:

38.1. *"[t]he greenhouse effect occurs on a global basis and the geographical source of GHG emissions is irrelevant when considering the future impact on the climate. CO2 has a residence time in the atmosphere of approximately 100 years by which time emissions from a single point source have merged with other anthropogenic and natural (e.g. volcanic) greenhouse gas emissions. Therefore **it is not possible to link emissions from a single source – such as the Thabametsi Project – to particular environmental and social impacts in the broader study area**" (emphasis added);<sup>30</sup> and*

38.2. *"[i]n addition, there are **no established, universally-acceptable guidelines for estimating the social costs of carbon (SCC)** related to a single project, firstly due to the complex nature of climate change and its drivers and secondly, because any assessment of the extent of climate change requires value judgements about the relative importance of temporal impacts. In 2010, the US Environmental Protection Agency, through a presidential executive order, adopted a US-specific framework for estimating social costs of carbon as part of Environmental Impact Assessments. However, the 2017 Technical Support Document to this executive order clearly points out that there are too many uncertainties with such an assessment and that the models used are imperfect and incomplete, and as such SCC estimates should be treated as provisional until improved scientific and economic information is available. The United Kingdom recently considered policy-level assessments of the social costs of carbon but has not applied them at project-level. South Africa, also, does not have a framework for estimating SCC".<sup>31</sup>*

39. The figures attributed to the social cost of carbon by the Interagency Working Group on the Social Cost of Greenhouse Gases (IWG) in the USA are **global** amounts in scope and applicability, representing the costs of global (and not USA-specific) impacts.<sup>32</sup> In any event, we have referred to these methods for calculating the cost of

<sup>29</sup> S2(4)(p), NEMA states that "costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment."

<sup>30</sup> P4, C&R report.

<sup>31</sup> P4, C&R report.

<sup>32</sup> The social cost of carbon, as determined by the IWG, is a consensus of the estimate of the social cost of carbon as calculated by three proprietary models: FUND, DICE, and PAGE, as described in the Technical Support Document available at [https://www.epa.gov/sites/production/files/2016-12/documents/scc\\_tsd\\_2010.pdf](https://www.epa.gov/sites/production/files/2016-12/documents/scc_tsd_2010.pdf) (p5):



carbon, simply as a means to demonstrate, *inter alia*: the kinds of costs that could be attributable to Thabametsi's GHG emissions if these would be calculated; that it certainly is possible – and important - to attribute a value to climate impacts of specific activities; and that as research progresses, we are developing a better understanding of the full extent of climate impacts and these costs are **increasing**. To further illustrate this point:

- 39.1. The IWG August 2016 Technical Support Document estimates the social cost of carbon for the years 2010 through 2050, (in 2007 US dollars per metric ton of CO<sub>2</sub>).<sup>33</sup> The IWG defines the social cost of carbon as *“the monetized damages associated with an incremental increase in carbon emissions in a given year. It is intended to include (but is not limited to) changes in net agricultural productivity, human health, property damages from increased flood risk, and the value of ecosystem services due to climate change.”*<sup>34</sup> If these most recent estimates were to be applied to Thabametsi, it would result in an average external cost of **\$480.5 million (which would be 6.25 billion South African Rand) per year in 2020,**<sup>35</sup> rising to **\$572.0 million (which would be 7.44 billion South African Rand) per year in 2030.**<sup>36</sup>
- 39.2. A recommendation issued by an Administrative Law Judge in the USA in 2016 to the Minnesota Public Utility Commission, recommended that the commission adopt the federal government's Social Cost of Carbon (FSCC). What is noteworthy is that the recommendation acknowledges some uncertainty in the FSCC and that the **science is already outdated**. The judge also concluded that, based on unreported and under-reported health and environmental impacts, along with the IWG's acknowledgement that the FSCC is not based on the most current research, the **preponderance of the evidence demonstrates that the FSCC understates the full environmental cost of CO<sub>2</sub>**. The Judge also concluded that *“... given the increased scientific certainty of the link between CO<sub>2</sub> emissions and climate change, uncertainties such as the potential danger of a ‘tipping point’ catastrophe reasonably require an initially high SCC until more is known about such uncertainties”* (emphasis added).<sup>37</sup> On 27 July 2017, the commission made a decision to significantly increase the “social cost” of carbon dioxide emissions from coal-fired power plants.<sup>38</sup>
- 39.3. When the IWG monetised damages associated with an incremental increase in CO<sub>2</sub>e emissions, it assumed that such damages, although costly, would not result in significant changes to domestic or global Gross Domestic Product (GDP). Experts now believe that damages associated with CO<sub>2</sub>e emissions do in fact depress domestic or global GDP, especially in poorer countries, substantially elevating the social cost of carbon. According to experts at Stanford University: *“Damages from climate change that directly affect growth rates have the potential to markedly increase the SCC (social cost of carbon) because each temperature shock has a persistent effect that permanently lowers GDP below what it would otherwise be ... Continued warming therefore has a compounding effect over time, so that even very small growth effects result in much larger impacts than the traditional damage formulation.... Examples of pathways by which temperature could affect the growth rate of GDP include damage to capital stocks from extreme events, reductions in TFP (total factor productivity) because of a change in the environment that*

---

*“We rely on three integrated assessment models (IAMs) commonly used to estimate the SCC: the FUND, DICE, and PAGE models. These models are frequently cited in the peer-reviewed literature and used in the IPCC assessment. Each model is given equal weight in the SCC values developed through this process, bearing in mind their different limitations.”*

<sup>33</sup> P4, available at [https://www.epa.gov/sites/production/files/2016-12/documents/sc\\_co2\\_tsd\\_august\\_2016.pdf](https://www.epa.gov/sites/production/files/2016-12/documents/sc_co2_tsd_august_2016.pdf). Table ES-1 represents 4 possible values with different discount rates. The 3% discount rate is accepted as the average cost but recommends that all 4 be considered.

<sup>34</sup> IWG (August 2016) Technical Support Document: Technical Update of the Social Cost of Carbon for Regulatory Impact Analysis Under Executive Order 12866.

<sup>35</sup> \$42/ton value from the “3% Average” column for the year 2020 x 1.158 (to adjust 2007 dollars to 2017 dollars) = \$48.64/ton in 2020 x 9.879 million tons CO<sub>2</sub>e/year from Thabametsi = \$480.5 million/year (in 2020) multiplied by an exchange rate of 13.01 South African Rand/\$US = 6.25 billion South African Rand/year.

<sup>36</sup> As calculated above but with the 2030 3% discount rate, which is 50, as reflected in Table ES-1, P4, available at [https://www.epa.gov/sites/production/files/2016-12/documents/sc\\_co2\\_tsd\\_august\\_2016.pdf](https://www.epa.gov/sites/production/files/2016-12/documents/sc_co2_tsd_august_2016.pdf).

<sup>37</sup> Para 43, section IX Uncertainty, p121, available at <https://www.elaw.org/system/files/MinnesotaCostofCarbon.pdf>.

<sup>38</sup> See <http://m.startribune.com/minnesota-regulators-increase-social-cost-of-co2-emissions-but-not-as-much-as-asked/437066353/?section=business>.

*investments were originally designed for, or slower growth in TFP because of the diversion of resources away from research and development and towards climate threats. Empirical evidence that these impacts exist is mounting.*<sup>39</sup>

- 39.4. Experts in the USA are therefore now of the view that even the IWG figures do not accurately account for the true social costs of GHG emissions – as they fail to consider additional factors such as climate damages on long-term GDP (as indicated above); the effect of emissions on ocean acidification and warming;<sup>40</sup> or the thawing of permafrost.<sup>41</sup> In other words the true social costs of GHG emissions are significantly higher than initially estimated.
40. There is no legitimate reason why a value cannot be attributed to the GHG emissions that will come from Thabametsi - this is being done in respect of other projects in South Africa and in other jurisdictions - particularly given that the high costs of adaptation and building resilience to climate change will ultimately have to be unfairly borne by the state and personally by the individuals impacted. Contrary to NEMA's requirement for environmental justice,<sup>42</sup> those most impacted are usually the poor and most disadvantaged members of society.
41. In 2010 (7 years ago), the World Bank conducted its own analysis of the social cost of CO<sub>2</sub>e emissions from Eskom's Medupi coal-fired power station when considering a loan to Eskom that would fund the Medupi power station. The World Bank report states that “[f]or each project, the economic assessment is also carried out incorporating the value of CO<sub>2</sub> emissions. For Medupi, this value is added as a cost of generating power. For each of the renewable energy projects and the railway project, this value is represented by the avoided cost due to displacement of CO<sub>2</sub> emissions (i.e., it is added as an economic benefit). This analysis uses a figure of \$29/ton CO<sub>2</sub> which is based on the Stern review.”<sup>43</sup>
42. A calculation of the external costs of Thabametsi's emissions would be in line with the polluter pays principle entrenched in NEMA<sup>44</sup> and the provisions of section 28 of NEMA, which places a duty on anyone who “causes, has caused or may cause significant pollution or degradation of the environment ... in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment,”<sup>45</sup> with measures including remedying the harm caused.
43. If and when a value is attributed to the external costs of GHG emissions, this, at the very least, can show what should be the true cost of operating a coal-fired power station such as Thabametsi. This could potentially also enable government to seek security for the costs, which it will inevitably and ultimately have to bear, and can open the door to claims for compensation, as indicated by the case law referred to below.
44. Essentially however, calculating the external costs of Thabametsi's GHG emissions will show that, **if Thabametsi had to absorb the external costs of its emissions, it would not be financially feasible to operate**, and decision-makers and stakeholders would be informed of the truly staggering cost of Thabametsi's GHG emissions. It would also mean that consumers would ultimately have to pay much higher costs for coal-based electricity in South Africa. Given that the CBIPPPP, in terms of which Thabametsi will operate,<sup>46</sup> provides for a tariff cap on electricity

<sup>39</sup> P127 - 131, F.C Moore & D.B Diaz, “Temperature impacts on economic growth warrant stringent mitigation policy”, *Nature Climate Change*, Volume 5, 2015.

<sup>40</sup> See Talberth, John, and Ernie Niemi. (2017) “Ocean Acidification and Warming: The economic toll and implications for the social cost of carbon.”

<sup>41</sup> See González-Eguino, M., & Neumann, M. B. (2016). Significant implications of permafrost thawing for climate change control. *Climatic Change*, 136(2), 381-388.

<sup>42</sup> Section 2(4)(c), NEMA.

<sup>43</sup> See para 157, p48 at <http://documents.worldbank.org/curated/en/126361469672138599/pdf/534250R20101005914.pdf>.

<sup>44</sup> Section 2(4)(p).

<sup>45</sup> Section 28(1) read with 28(3)(f), NEMA.

<sup>46</sup> P56, GHG report.

of R0.82 per KWh (kilowatt hour), if the external costs were to be factored in to Thabametsi's operating costs, it could mean that this cap would be exceeded.

45. We point out that there is a growing volume of international case law dealing with the liability of fossil fuel companies for the financial loss and damages caused by their GHG emissions.<sup>47</sup> This is aided by work such as that conducted by Paul Griffin, which found that 100 active fossil fuel producers are linked to 71% of industrial GHG emissions since 1988,<sup>48</sup> and Richard Heede.<sup>49</sup> For example, two local governments and a city in California have recently sued 37 oil, natural gas and coal companies, and trade groups, on the basis that their actions have intensified climate change and exacerbated costly sea-level rise.<sup>50</sup> One of the applicants in this case claims that it stands to lose assets to the value of \$24 billion as a result of climate change. In an earlier case of *Saúl v RWE*, a Peruvian farmer has sued the German company RWE for damages arising from glacial flooding.<sup>51</sup> In British Columbia, communities and local governments are demanding that fossil fuel companies pay for their share of the harm caused by fossil fuel pollution.<sup>52</sup>
46. Although it is difficult to estimate such damages and external costs, there is significant guidance in doing so, and Thabametsi's failure to estimate such costs must be remedied.

#### Thabametsi's resilience to climate change

47. The final CRA report still highlights water availability as the main risk to the Thabametsi project.<sup>53</sup> Yet the summary report seems to have changed the CRA report's conclusion of water scarcity being a high risk – in the risk table on pages 20 to 26 of the summary report - to a low risk.<sup>54</sup> It is not clear on what basis and why the project's environmental assessment practitioner (EAP), Savannah Environmental (Pty) Ltd, has seen fit to convert the high risk to a low risk. We and our clients strongly dispute that it was appropriate to do so. Indeed, the facts and evidence do not justify a low risk assessment.
48. Water availability for the Thabametsi power station is evidently a high risk, given that climate change is likely to affect precipitation levels, thereby resulting in water shortages and negatively impacting water quality.<sup>55</sup> The CRA report states that there is uncertainty around the precipitation projections.<sup>56</sup> There, however and according to the CRA report, appears to be good agreement between the climate models that temperature increases of about 2 to 3 °C for Lephalale will occur, and there is likely to be a significant increase in hot and very hot days.<sup>57</sup>

---

<sup>47</sup> See the following reports: *A Global Review: The Status of Climate Change Litigation*, <http://columbiaclimatelaw.com/files/2017/05/Burger-Gundlach-2017-05-UN-Envt-CC-Litigation.pdf> and *Climate Justice: The International Momentum towards Climate Litigation*, <http://climatejustice.org.au/wp-content/uploads/2017/05/Report-Climate-Justice-2016.pdf>.

<sup>48</sup> <https://b8f65cb373b1b7b15feb-c70d8ead6ced550b4d987d7c03fcdd1d.ssl.cf3.rackcdn.com/cms/reports/documents/000/002/327/original/Carbon-Majors-Report-2017.pdf?1499866813>.

<sup>49</sup> <https://link.springer.com/article/10.1007/s10584-013-0986-y>

<sup>50</sup> See <https://www.scientificamerican.com/article/california-locals-sue-fossil-fuel-companies-for-rising-seas/>.

<sup>51</sup> See <https://germanwatch.org/en/13887>. Although the case was dismissed by a German court in the first instance due to issues of causality, the applicant has appealed the case on the basis that, *inter alia*, the multitude of co-causers of 'slow onset'-type cumulative damages is not a convincing reason for a 'blanket ban' on legally attributing liability for causal contributions by individual emitters that are quantifiable and not insignificant. There is no legal basis for conflating the liability of major emitters for consequences of climate change, for which they are to a significant extent co-responsible, with a de facto "collective non-responsibility" of the countless minor emitters.

<sup>52</sup> <http://www.climatelawinourhands.org/>.

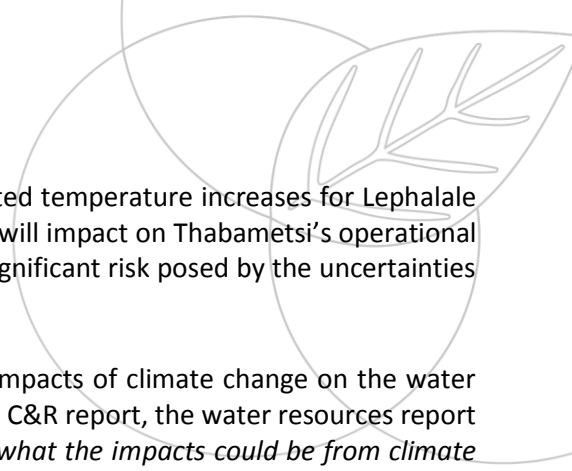
<sup>53</sup> PXI, CRA report. P27, summary report.

<sup>54</sup> Risks 3a and 3b are reflected as low in the summary report (p23) and high in the CRA report (pXI).

<sup>55</sup> PXI, CRA report.

<sup>56</sup> PVIII, CRA report.

<sup>57</sup> PVIII, CRA report.

- 
49. We place on record that our client is highly concerned about the projected temperature increases for Lephale and Thabametsi's indirect contribution thereto – noting as well that this will impact on Thabametsi's operational efficiency. Our comments below, however, address predominantly the significant risk posed by the uncertainties around future water availability for both Thabametsi and Lephale.
50. The water resources report seeks to provide a review of the potential impacts of climate change on the water resources in the area where Thabametsi will be based.<sup>58</sup> According to the C&R report, the water resources report *“expands on the CRA with respect to water issues, and seeks to explore what the impacts could be from climate change projections which have relevance to the Thabametsi Project's water supply from MCWAP-1 (Mokolo Crocodile Water Augmentation Project) and MCWAP-2 schemes and the management thereof.”*<sup>59</sup>
51. The CRA report states that Thabametsi will rely on *“the successful implementation of the water reconciliation schemes to ensure adequacy of water supplies in Lephale in future”*.<sup>60</sup> The “water reconciliation schemes” being referred to are, presumably, the Mokolo Crocodile Water Augmentation Project, phases 1 and 2 (MCWAP1 and MCWAP2). The water resources report states that *“the water requirements for the project will be met entirely by the South African government's water transfer scheme in the region known as the Mokolo Crocodile (West) Water Augmentation Project Phase 1 and 2.”*<sup>61</sup> However, given the numerous uncertainties around water availability, as well as the fact that MCWAP2 has not yet obtained an environmental authorisation (it has not even commenced with the impact assessment process), this is not a reasonable or acceptable conclusion.
52. Despite the uncertainties around water availability in terms of climate projections in the CRA report, the report regards **water availability and water quality deterioration as a high risk** because *“these risks are affected by numerous drivers, a number of which the plant has limited influence over”*.<sup>62</sup> This pertains, for example, to the implementation of MCWAP2.
53. In the draft CCIA and PIA comments, we stated that:
- 53.1. it is well documented that water is a serious concern in the Mokolo catchment and climate change will negatively impact this further, and place uncertainty on future water availability, presenting risks to the long-term feasibility of the project;
  - 53.2. we were concerned that the draft CRA report underestimated the risk associated with the proposed MCWAP2 - on which Thabametsi and other projects in the area plan to depend - in terms of if, and if so, when, it will commence and be operational;
  - 53.3. the risks associated with the MCWAP2 water supply needed to be properly acknowledged in the CCIA, since they could pose an additional risk to the long-term feasibility of this project;
  - 53.4. even with MCWAP2, the demand scenarios in the GHG report highlighted risks of shortfalls in water available from the Crocodile River,<sup>63</sup> and
  - 53.5. the draft CRA report did not mention that the scoping phase of the EIA for MCWAP2 had not yet commenced and that it was therefore not certain, at that stage, whether MCWAP2 would obtain all the necessary authorisations to go ahead.

---

<sup>58</sup> P1, water resources report.

<sup>59</sup> P7, C&R report.

<sup>60</sup> This is stated in numerous places, but see page 27 of the CRA report as one example.

<sup>61</sup> P1, water resources report.

<sup>62</sup> PXII, CRA report.

<sup>63</sup> P26, CRA report states *“it is important to note that water requirements for ecological water requirements ... are not considered in the updated Limpopo Water Management Area North Reconciliation Strategy. Should these be implemented the yields of major dams would be significantly impacted, with a potential 57% reduction in the 1:50 year yield from Mokolo Dam.”*

- 
54. We stand by these submissions and point out that the scoping phase for MCWAP 2 has still not commenced. Although the scoping phase for MCWAP2 was intended to go ahead in April 2017, we were advised by the EAP dealing with MCWAP2, on 10 July 2017, that *“the status of the project is still unchanged ... we will update the Interested and Affected Parties once we have received further instructions from the Department of Water and Sanitation. We are unable to estimate the date by when the Scoping Report will be ready.”* A copy of this email is attached marked “2”. Evidently the prospects of MCWAP2 proceeding - either as planned, or at all - are far from certain.
55. The CRA report concludes that Thabametsi’s water demand is ‘small’, and if MCWAP2 proceeds, the water demands of the plant should be met.<sup>64</sup> As indicated above, there is by no means any certainty that MCWAP2 will go ahead as intended. It is also disputed that Thabametsi’s water demand is ‘small’, with a demand of 1 300 000m<sup>3</sup> of water per annum, when fully operational, and with a consumption rate of 0.144 litres per kWh - according to the surface water report.<sup>65</sup> Thabametsi’s integrated water and waste management plan estimates an even higher amount of water use, stating that the plant, when fully operational, will require 1 500 000m<sup>3</sup> of water per year.<sup>66</sup> It is unclear why different sources provided different estimates for water use. We, on behalf of our client, have raised numerous concerns around Thabametsi’s proposed water uses, in the objections to Thabametsi’s water use licence (WUL) application, which are attached marked “A1”.
56. The C&R report, in response to the numerous concerns around water availability for Thabametsi that were raised in the draft CCIA and PIA comments, states that:
- *“in accordance with the Guidance Note, the Thabametsi Project has already initiated its IWULA pre-application process and has been issued with a non-binding confirmation of water availability from the DWS (Department of Water and Sanitation);*
  - *the water for phase 1 of the Thabametsi Project will be sourced from an already existing allocation from the MCWAP-1 scheme made to Exxaro Coal (Pty) Ltd (Exxaro), under authorisation of DWS and the draft IWULA has already been provided to the public for comment and the final IWULA will be submitted for public review and approval by DWS in due course;*
  - *the applicant's water use will constitute less than 1.8% of the already existing allocations of water from the MCWAP-1 scheme. Because the water will be sourced from an existing allocation, the Thabametsi Project is not placing additional consumptive demands on water resources in Lephalale;*
  - *... the proposed Thabametsi Power Station will use a selection of dry cooling technologies which will serve to reduce water requirements for the plant. This type of technology uses up to 15 times less water than a wet cooled plant. Detailed water consumption comparison is explained in the WRR [water resources report];*
  - *the Thabametsi Project, as recorded in the CRA, is expected to have minimal impacts on water resources as it has been designed to be a zero liquid effluent discharge plant and will not use groundwater resources;*
  - *in compliance with the requirements in the Guidance Note, the Thabametsi Project will include an 18 day raw water storage provision in case of low water conditions; and*
  - *the 2013 National Water Resource Strategy (2013 NWRS), in accordance with section 6 of the National Water Act, provides that the highest allocation priority is afforded to water for the purposes of the Reserve. The first objective of this priority is to ensure that that sufficient quantities of raw water are available to provide for the basic water needs of people. In other words, should water supplies become limited to the extent that the water priorities identified in the 2013 NWRS, the communities' needs will be prioritised.”<sup>67</sup>*
57. While we note the responses above, our client’s concerns are predominantly in relation to future availability of water for the Thabametsi project, given that it is intended to have a lifespan of at least 30 years. The lifespan

---

<sup>64</sup> PXI, CRA report.

<sup>65</sup> P19, Surface Water Report, EIR.

<sup>66</sup> IWWMP, Table 2-3.

<sup>67</sup> P10, C&R report.

stipulated in Thabametsi's EIR is in fact, a period of 40 years.<sup>68</sup> It may then be that Thabametsi will still continue to require water for an additional 10 years.

58. The circumstances around water availability are likely to look very different 20 to 30 years from now – mainly due to the effects of climate change - and the CRA report predicts as much. A non-binding confirmation of water availability from the Department of Water and Sanitation (DWS) is – as the title makes clear – non-binding, and cannot serve as a guarantee of water availability for the duration of the power station's intended lifespan. The DWS report did not assess the potential threats to the water resources from climate change.
59. The water resources report and CRA report highlight numerous uncertainties regarding water availability for Thabametsi, many of which are due to the potential impacts from climate change; including that:
- 59.1. there is significant model disagreement with rainfall predictions;<sup>69</sup>
  - 59.2. a change in rainfall would mean amplified hydrological impacts;<sup>70</sup>
  - 59.3. climate change data currently are not clear on hydrological impacts and probability of adverse effects;<sup>71</sup>
  - 59.4. the impacts of climate change on MCWAP phase 1 cannot be quantified, and the MCWAP2 scheme is currently being assessed; there is thus a **high risk regarding water availability**;<sup>72</sup>
  - 59.5. there is some uncertainty in relation to whether the surplus in the Crocodile River catchment will be able to meet demand in Lephalale and the timings in relation to the completion of MCWAP2;<sup>73</sup> and
  - 59.6. there is a **high risk of water quality deteriorating**.<sup>74</sup>
60. These uncertainties are significant and are not afforded sufficient weight in the summary report. The implications for Thabametsi's continued existence could be fatal.
61. Even if no regard were had to climate change projections on water availability in the area, the project area is already water-scarce and vulnerable to extreme weather events such as droughts and flooding.<sup>75</sup> The CRA report also acknowledges that there will be increased water stress in the area based on a higher demand from industrial users in both the Mokolo and Crocodile (West) river catchments – this alone is sufficient to indicate a high risk to the power station and surrounding area's available water resources, despite any uncertainty in the climate modelling projections.<sup>76</sup>
62. The CRA report and summary report fail to stipulate what will happen if there is, in fact, insufficient water for Thabametsi to operate in future, including if MCWAP2 does not go ahead. This is a further failure on the part of the CCIA, because climate change is likely to impact significantly on water availability. Among other things, it is contrary to the NEMA requirement to take a 'risk-averse and cautious' approach – particularly where there is uncertainty and potentially high and irreversible impacts - which takes into account the limits of current knowledge about the consequences of decisions and actions.<sup>77</sup>

---

<sup>68</sup> P173, final environmental impact report.

<sup>69</sup> P9, water resources report.

<sup>70</sup> P2, water resources report.

<sup>71</sup> P2, water resources report.

<sup>72</sup> P2, water resources report.

<sup>73</sup> P43, CRA report.

<sup>74</sup> P43 – 44, CRA report.

<sup>75</sup> PVII, CRA report.

<sup>76</sup> Px, CRA report.

<sup>77</sup> S 2(4)(a)(vii), NEMA.

The failure to consider how Thabametsi will exacerbate the impacts of climate change for impacted communities and the environment

63. We note that, despite our recommendation, the CRA report still fails to look at Thabametsi's impacts on communities and the ways in which Thabametsi will increase the surrounding area's vulnerability to climate change - a very relevant consideration in the context of an EIA and, specifically, a CCIA in relation to a proposed coal-fired power station.
64. The CRA report simply refers to "*industrial users being blamed for water shortages*"<sup>78</sup> and possible threats to Thabametsi's "*social licence to operate*"<sup>79</sup> – although it is still not clear what a 'social licence' is in this context.
65. If the "social licence to operate" refers to potential civil society opposition to the Thabametsi coal plant, then we submit that the risk to the "social licence" has in fact been understated.<sup>80</sup> This risk is likely to be much higher than identified, at least for the future climate scenarios. The tide is already turning against coal internationally, with a mounting list of countries phasing out their dependence on coal: a recent report from the International Energy Agency predicts that global investment in coal-fired power plants is set to decline dramatically.<sup>81</sup> As the impacts of climate change continue to increase, it is likely that no coal plants will have a "social licence" to operate in the 2040 to 2060 timeframe.
66. The CCIA is completely silent on the resilience of the affected environment and people's livelihoods and health to the Thabametsi project in the face of climate change.
67. The C&R report states that:
- 67.1. *"... a traditional impact assessment is conducted by determining how the proposed activities will affect the state of the environment described as the baseline. As noted in Section 2.1 of the CCIA (report), in the case of GHG emissions, this process is complicated by the fact that **the impact of GHGs on the environment cannot be quantified within a defined space and time. The greenhouse effect occurs on a global basis and the point source of emissions is irrelevant when considering the future impact on the climate and it is not possible to link emissions from a single source – such as the Thabametsi Project – to particular environmental and social impacts in the broader study area.** In respect of the project's impact on South Africa's capability to adapt to a changed climate, section 4.2.4 of the CCIA (report) also assesses the degree to which the planned project is consistent with South Africa's stated climate change and energy policy, including comparison with the country's Peak, Plateau and Decline (PPD) target"* (emphasis added);<sup>82</sup>
- 67.2. *"... In the circumstances, the environmental and social impacts of the Project have been assessed to the extent it is able to do so within the context and within the information available to its advisors and the applicant submits that it has performed a fair and accurate assessment in terms of its obligations under NEMA and all other applicable law";<sup>83</sup> and*
- 67.3. *"to the extent that Earthlife has requested that a study be done on the wellbeing and resilience of the wider South African public, this is a study that should instead be conducted by the DEA. The applicant is*

---

<sup>78</sup> PXI, CRA report.

<sup>79</sup> PXI, CRA report.

<sup>80</sup> 6B, Table 3.3, CRA report.

<sup>81</sup> See <https://www.carbonbrief.org/seven-charts-show-why-the-iea-thinks-coal-investment-has-already-peaked>. See also, the Report 'Boom and Bust 2017', which looks at the dramatic drop in coal development in 2016, available at <http://endcoal.org/wp-content/uploads/2017/03/BoomBust2017-English-Final.pdf>.

<sup>82</sup> P4 -5, C&R report.

<sup>83</sup> P5, C&R report.

*not obliged by law or required by the DEA, to include issues which are beyond the ambit of the approved Scope of Work.”<sup>84</sup>*

68. Our client disagrees with these contentions. Applying the same logic would mean that one cannot link the GHG emissions from Thabametsi to the climate change impacts on Thabametsi. The fact of the matter is that conducting a full and comprehensive CCIA would require consideration of **both** the power station and the surrounding area and community’s resilience to climate change. The CCIA must, at the very least, include: an evaluation of how climate change will impact the people in Lephalale, how Thabametsi’s existence will (through its use of limited water, use of land, and air emissions) exacerbate those climate impacts, and it must propose methods for avoiding, mitigating and/or remediating those impacts. For example, the CCIA should discuss decreased agricultural productivity and other harms to people and communities that would result from climate change, and proposed mitigation measures. In addition, the various water quantity and quality impacts identified in the CCIA should be addressed from the standpoint of people and communities; rather than just considering how water quantity and quality will affect the operation of the coal plant.
69. The CCIA concludes, in the water resources report, that *“there are predicted to be no impacts to local water resources arising from water use”* because Thabametsi will be a zero liquid effluent discharge plant and it will not use groundwater resources.<sup>85</sup> This fails to account for other aspects of the project that are likely to lead to water contamination, such as the ash dump run-off and polluted water overflows due to flooding of the Mokolo River. The reduced water availability resulting from climate change could also mean that pollution of water resources will be significantly worse due to lower dilution.
70. Thabametsi will, through its operations, be utilising and polluting limited water – required by communities in the area, as well as by farmers and ecosystems – the availability of which will reduce as a result of climate change. We have always maintained that more consideration needs to be given to how Thabametsi’s use of limited water (which will become even more limited as climate change progresses) will impact on downstream users, bearing in mind that this will mean less water for communities, farmers, and the surrounding environment. The CRA report itself acknowledges that this may impact on Thabametsi’s “social licence to operate”, or that it may cause industrial users to be “blamed for water shortages”. There is thus no reason why the CCIA cannot assess, in further detail, how Thabametsi will impact on the surrounding area’s resilience to climate change and thereby on the vulnerability of communities and the environment in the area to the impacts of climate change, and how Thabametsi is likely to exacerbate these impacts. This is a significant shortcoming in the assessment.
71. To give just one example: in an application for an environmental authorisation for an iron ore mining project in the Limpopo province was refused by the Limpopo Department of Economic Development Environment and Tourism (LEDET). One of the reasons for LEDET’s refusal was that *“the proposed development area is **important for climate change resilience** due its biophysical features ... [and] that the IDP (integrated development plan) states that **well-functioning eco-systems provide natural solutions that build resilience and help society adapt to the adverse impacts of climate change**”* (emphasis added).<sup>86</sup> A copy of this decision is attached marked “3”.
72. These considerations of community and environmental impacts of a proposed project from a resilience perspective were taken into account in relation to the above project, also proposed in the water-scarce Limpopo province. There is absolutely no reason why such impacts cannot be considered in relation to the Thabametsi project. Indeed, the failure to do so in the CCIA is a fatal flaw.

---

<sup>84</sup> P6, C&R report.

<sup>85</sup> P11, water resources report.

<sup>86</sup> At paragraphs 46 and 47.



## The failure to propose adequate mitigation measures & make adequate recommendations

73. NEMA requires that “*pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied*”.<sup>87</sup> Despite this requirement, the CCIA and summary report appear to assume – incorrectly and contrary to the purpose of such assessment - that Thabametsi will and must go ahead – failing to give any consideration to the ‘avoidance’ requirement that could be satisfied through, for example, pursuit of renewable energy, energy efficiency, and energy storage alternatives. NEMA clearly requires a full and objective evaluation of all three of these requirements – avoidance, minimisation, and remediation – rather than taking the proposed project as a pre-ordained result.
74. Furthermore - as is evident from the statements in the CCIA and the weak “mitigation recommendations” made therein - if the power station is to proceed as intended, the requirement of “minimising and remedying” cannot be adequately met, because it is not possible to adequately remedy and minimise the significant climate change impacts of a coal-fired power station, particularly where carbon capture and storage is not only not feasible, but not being implemented in South Africa.<sup>88</sup>
75. The final CCIA and the C&R report do little to address the ‘unknowns’ highlighted in the draft CCIA and PIA comments. The C&R report responses to the recommendations made in the draft CCIA and PIA report are also not acceptable. The report concludes that “*it is submitted that sufficient mitigation factors have been identified in order to mitigate the negative effects of the Project.*”<sup>89</sup> This is simply not the case.
76. NEMA also requires that procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment, must include - in respect of every EIA (which would include a CCIA) an “*investigation of the potential consequences or impacts of the alternatives to the activity on the environment and assessment of the significance of those potential consequences or impacts, including the option of not implementing the activity*”.<sup>90</sup> We also note that the CCIA does not look at alternatives to the Thabametsi project, including implementing the no-go option (i.e. the option of not implementing the activity) as required.
77. Instead, as a ‘mitigation measure’, the CCIA simply recommends that the findings of the CRA report be investigated further as the project progresses into more detailed design stages.<sup>91</sup> The primary measure proposed to address emissions is an energy and emissions management plan, which, according to the GHG report is “*critical if the GHG emissions of the plant are to be managed over time*”.<sup>92</sup> The CCIA proposes a thermal efficiency and GHG management plan, which sets only very vague measures, such as: measuring GHG emissions (which it is legally required to do in any event); setting targets to maximise and maintain heat rate and thermal efficiency; and identifying and implementing heat rate improvement and GHG reduction projects.<sup>93</sup> There is no assurance, nor is there reason to believe, that any of the proposed measures will give rise to a substantial decrease in GHG emissions. It is more likely that these measures will, at best, manage and maintain the status quo of the plant’s existing high GHG emissions, but not result in a decrease in the already-anticipated emissions of the plant when it is operating optimally. These are not acceptable mitigation measures.
78. It is the increased N<sub>2</sub>O emissions, due to the use of CFB technology in the Thabametsi design, which increase the total Thabametsi GHG emissions (and emissions intensity) – making them much higher than those of an average PFB (pulverized fuel boiler) coal-fired power station.<sup>94</sup> The CCIA considers **several possible measures to abate N<sub>2</sub>O**

<sup>87</sup> Section 2(4)(a)(ii), NEMA.

<sup>88</sup> P6, GHG report.

<sup>89</sup> P15, C&R report.

<sup>90</sup> section 24(2A)(4)(b)(i), NEMA.

<sup>91</sup> P55, CRA report.

<sup>92</sup> P66, GHG report.

<sup>93</sup> P66 – 67, GHG report.

<sup>94</sup> 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Chapter 2, Table 2.6, p2.25. Available at [http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2\\_Volume2/V2\\_2\\_Ch2\\_Stationary\\_Combustion.pdf](http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf).

**emissions, responsible for 21% of Thabametsi's total GHG emissions, but finds none to be feasible**, on the grounds that such mitigation technologies cannot be used with Thabametsi's location-specific design factors.<sup>95</sup> Even if design factors necessitated by Thabametsi's proposed location in a water-scarce area prevented it from minimising GHG emissions, the CCIA does not consider alternative locations that would allow for lower emissions levels. Instead it is only able to propose a set of maintenance and operational measures<sup>96</sup> that, if followed, may maintain design energy efficiency and design emissions performance throughout the operational life of Thabametsi. In other words, it offers a number of **suggestions to avoid a deterioration of GHG emissions performance over the lifetime of the plant, but none to reduce the already high baseline emissions**. The CCIA already assumes constant efficiency throughout the life of the plant in its estimates of life-cycle emissions. This, as advised above, is unlikely to be the case.

79. Furthermore, the proposed measures for addressing the climate risks to the power station, as outlined in the CRA report, also fail to provide any assurance that the main climate-related risks to the power station and surrounding area will be adequately avoided and curtailed. There is very little that can be done to address the water scarcity issue – which is evident from the fact that MCWAP2 coming into operation is crucial to the continued existence of Thabametsi, particularly if Thabametsi wishes – as it does - to proceed to phase 2 of the power station project.
80. The CCIA itself states that *“whilst the ... analysis helps to give a sense of the scale of the Project's emissions relative to South Africa's emissions, there are significant limitations associated with using national GHG inventories to understand the magnitude of a Project's emissions...”*<sup>97</sup> The GHG report gives Thabametsi a **“high significance rating (negative)”** and states that, *“in the absence of CCS (carbon capture and storage), which is not feasible for SA, all coal plants will have this rating”* (emphasis added).<sup>98</sup>
81. We emphasise that, because of the “significant limitations” referred to above, as well as the significant and high rating, the precautionary principle must apply. Further, if the significant impacts (which outweigh any presumed benefits) cannot be avoided or remedied, the project cannot go ahead. This is what is required by NEMA.<sup>99</sup>
82. As indicated above at paragraph 32, not only will Thabametsi give rise to the **unavoidable** climate impacts that arise from all coal-fired power stations, but in fact **Thabametsi's unavoidable climate impacts will be worse than those of average South African coal plants**, based on the high emission intensity of the proposed technology for the project.
83. Therefore, while the CCIA appears to appreciate the **high and significant risks and climate impacts** of Thabametsi, **it does not propose any measures to effectively and significantly mitigate the GHG emissions of Thabametsi or any implementable solutions for the climate risks**, nor does it reach the necessary conclusion that, because the significant impacts cannot be mitigated, the Thabametsi power station should not go ahead. In fact, the conclusion in the summary report appears to completely disregard the findings of the CCIA, stating that the impacts of Thabametsi are expected to be of medium to low significance with the implementation of appropriate mitigation measures. It makes this unsubstantiated conclusion even though the **impact rating for climate change in the CCIA reports is high**, and even though the CCIA itself acknowledges that there is little that can be done to mitigate the plant's emissions. This, our client submits, is unacceptable and unlawful. We point out that an EAP, under the NEMA EIA Regulations, 2014 is obliged: to be independent, to ensure compliance with the EIA Regulations (which requires an EIA to include a summary of key findings and a description of any assumptions<sup>100</sup>) and to disclose to the proponent and competent authority all material information that has or may have the potential of influencing any decision to be taken.<sup>101</sup>

<sup>95</sup> Section 5.4.1, p68, GHG report.

<sup>96</sup> Section 5.4.1, p68, GHG report.

<sup>97</sup> P53, GHG report.

<sup>98</sup> P54 & 62, GHG report.

<sup>99</sup> Section 2(4)(a)(viii).

<sup>100</sup> Appendix 3, section 3(p), EIA Regulations, 2014.

<sup>101</sup> Regulation 13(1)(a), (c) and (f), EIA Regulations, 2014.

## The unlawfulness of authorising Thabametsi in light of the information in the CCIA

84. We submit that, given: the high GHG emissions and consequent significant climate impacts that Thabametsi is expected to have; the lack of any adequate means to avoid and remedy these impacts; and South Africa's vulnerability to the impacts of climate change,<sup>102</sup> allowing the proposed Thabametsi power station to go ahead would be unlawful as it would contravene NEMA and section 24 of the Constitution – namely the right to an environment not harmful to health or well-being and the right to have the environment protected for the benefit of present and future generations.
85. We again point out that the conclusion of the summary report is incorrect and unlawful, as it completely disregards the findings of the specialist studies conducted by ERM as part of the CCIA. In this regard, we emphasise the following findings of the CCIA:
- 85.1. the high and significant GHG emissions to be caused by Thabametsi;<sup>103</sup>
  - 85.2. the high risk that will be posed by climate change to the Thabametsi project and surrounding area by the impacts of climate change;<sup>104</sup> and
  - 85.3. the unavailability of substantive mitigation measures to avoid or remedy the significant climate impacts.<sup>105</sup>
86. There can be no basis for justifying such a harmful and risky project. Even if it could be justified (which it cannot), there is no need for the Thabametsi power station. Below we set out:
- 86.1. why there is no need for the power station; and
  - 86.2. that any benefits would be heavily outweighed by the harm that will be caused if Thabametsi goes ahead.

### There is no need for the Thabametsi power station

87. In the draft CCIA and PIA comments, we referred to the false and inaccurate claims made around the need for the Thabametsi project.
88. In response to this the C&R report states that:

*“South Africa’s electricity generation plans for the period 2010 to 2030 are set out in the Integrated Resource Plan for Electricity 2010-2030 (2010 IRP). The 2010 IRP was adopted by Cabinet, and thus represents State policy. The 2010 IRP expressly envisaged that coal fired power plants would be established by independent power producers, in 2014/2015 “in order to avoid security supply concerns” and that these privately operated power stations would generate electricity through the fluidised bed combustion process. The Project is therefore a necessary project, pursuant to national interest. In addition, the revised draft Integrated Resources Plan for period up to 2050 (2016 IRP), recently available for public comment, includes all projects that have been committed to (which includes the Thabametsi Power Station) in the 2016 IRP update base case.*

*The 2016 update base case was produced by updating the optimisation model (using the 2010 IRP as a base) with the latest assumptions and input parameters. A number of government policy positions imposed in the IRP 2010-30 were maintained, inter alia, emissions constraints, which included government policy to reduce*

---

<sup>102</sup> P8, National Climate Change Response White Paper, available at [https://www.google.co.za/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=national+climate+change+response+white+paper&\\*](https://www.google.co.za/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=national+climate+change+response+white+paper&*.).

<sup>103</sup> p6 & 7, GHG report.

<sup>104</sup> Table 5.2, p42 – 47, CRA report.

<sup>105</sup> P63 – 70, GHG report.

GHG emission. Therefore, the Thabametsi Power Station has been considered in the context of the realistic energy supply required in South Africa.

*In amplification of the above, it is noted that in January 2017, Eskom had reported a surplus of 5 600MW at peak that could meet any increase in demand until 2021. However, the Thabametsi Power Station is envisaged to only come online in 2021/22 and as such, will not add to the current excess capacity, which is anticipated to hold only until 2021.”<sup>106</sup>*

89. The IRP 2010, as advised in previous submissions, is outdated (it should have been revised as far back as 2012),<sup>107</sup> and can no longer be relied upon to reflect South Africa’s current electricity needs. The Ministerial Determination of December 2012 which called for 2500MW of coal-based energy from IPPs (and prompted the CBIPPPP) is wholly outdated and no longer reflects South Africa’s realities.
90. Furthermore, the 2016 IRP Update is still in the process of being finalised and can also not be relied upon as a final reflection of South Africa’s desired electricity plans. Institutions such as the Council for Scientific and Industrial Research (CSIR) as well as civil society have voiced numerous concerns over and posed objections to the significant provision for new coal included in the 2016 IRP update, which currently includes Thabametsi.<sup>108</sup> The Energy Intensive Users Group argued that *“there is no need for an urgent investment decision for further base load capacity in the short-term,”* and that *“carbon pricing would increase the cost of fossil-fuel technologies and thereby make renewables more attractive options”*.<sup>109</sup>
91. Concerns with the draft IRP Update include that many of the cost assumptions used by the 2016 IRP underestimate the cost of coal, overestimate the costs of renewables, and underestimate the feasibility of pursuing increasing levels of renewable resources in South Africa. Many of these comments demonstrate that, in contrast to the draft 2016 IRP update, South Africa can significantly reduce its reliance on coal, while significantly increasing its commitment to renewable energy. This renewable alternative would not only be technologically feasible, but also much cheaper than using coal. For example, the CSIR report, titled *“Least-cost electricity mix for South Africa by 2040”*,<sup>110</sup> concludes that a “re-optimised” energy scenario - in which renewable energy would dominate the energy mix – would provide the least-cost energy mix for South Africa and would also significantly reduce South Africa’s CO2 emissions and water use by up to 60%. This would see major environmental and health benefits, as well as socio-economic benefits.
92. It is our submission that the draft 2016 IRP update as it currently stands is unlawful and unconstitutional – as appears from our comments of 31 March 2017.<sup>111</sup>
93. The C&R report takes the stance that our client’s objections to Thabametsi should rather be focused against the IRP and policy decisions calling for new coal-fired electricity generation. It states:
- 93.1. *“This is an issue to be addressed at policy level, when assessing the Coal Baseload IPP Programme, rather than targeting such objections to specific projects. In addition, Thabametsi’s power purchase agreement is for 30 years and it will only emit GHGs until 2050.”<sup>112</sup>*

<sup>106</sup> Item 8, p5, C&R report.

<sup>107</sup> The IRP states that it is a “living plan” that must be revised every 2 years and that there should be a revision in 2012. Para 1.1, p7, IRP 2010-2030.

<sup>108</sup> See comments submitted by CSIR, Meridian Economics, Greenpeace, Climate Reality Project, GreenCape and groundWork for example available at [http://www.energy.gov.za/files/irp\\_frame.html](http://www.energy.gov.za/files/irp_frame.html).

<sup>109</sup> <http://www.energy.gov.za/IRP/irp-presentations/High-level-Comment-on-the-Draft-IRP-Base-Case-EIUG.pdf>

<sup>110</sup> [http://www.ee.co.za/wp-content/uploads/2016/11/RE-Futures-Windaba-CSIR-3Nov2016\\_FINAL.pdf](http://www.ee.co.za/wp-content/uploads/2016/11/RE-Futures-Windaba-CSIR-3Nov2016_FINAL.pdf)

<sup>111</sup> These comments are available at <https://cer.org.za/wp-content/uploads/2016/08/CER-IRP-Base-Case-IEP-Comments-31-3-2017.pdf>, and can also be made available on request.

<sup>112</sup> P14, C&R report.

- 93.2. *“... although the impact rating associated with climate change impacts is rated as high. Recommendations have been made within the CCIAR regarding mitigation and adaptation measures which are to be considered for the Project. These will assist in addressing the impacts to some extent. It is apparent from this statement that the purpose of these comments from Earthlife is in fact to try and prevent the building of coal power stations and not so much that additional factors relating to climate change impact should be considered. Earthlife's objections are contrary to current government policy decisions and to which no legal challenge has been instituted. Notwithstanding the above, the choice to continue meeting South Africa's generation needs with a mix of renewable and non-renewable energy is a legitimate policy decision that has already been executed. Thabametsi has been planned pursuant to such policy”* (emphasis added).<sup>113</sup>
94. In response to the above, we submit that these arguments are incorrect and irrelevant. The Thabametsi judgment made clear that:
- 94.1. the existence of the IRP does not do away with the need for the impacts of individual projects to be assessed independently, stating that the *“assertion that the instruments constitute binding administrative decisions not to be circumvented to frustrate the establishment of authorised coal-fired power stations is unsustainable, as is the notion that their mere existence precludes the need for a climate change impact assessment in the environmental authorisation process. Policy instruments developed by the Department of Energy cannot alter the requirements of environmental legislation for relevant climate change factors to be considered”*;<sup>114</sup> and
- 94.2. that our client is not acting illegitimately in its attempts to derail the establishment of Thabametsi.<sup>115</sup>
95. We have also pointed out in the draft CCIA and PIA comments that the circumstances around electricity demand have changed significantly since the 2010 IRP. At present, and for more than 1 year now, Eskom has had a surplus of electricity. It makes numerous references to such surplus capacity in its latest integrated report.<sup>116</sup> Recent media reports have stated that Eskom's local power surplus is set to rise as it brings on more generation capacity at a time when local demand for energy has dropped to an 11-year low.<sup>117</sup>
96. The C&R report responses to this are the following:
- 96.1. *“Whilst we note that Eskom has commented that there has been "surplus capacity", we also note from the same statement that "Eskom has surplus capacity until 2021". Thabametsi will commence operation in 2021/22 and therefore will be able to significantly contribute to the electricity grid. In addition, the need for a project such as Thabametsi was not only to meet the electricity demands present at the time the decision was made, but to also secure electricity supply in future. Accordingly Thabametsi is in fact required to meet the energy needs of South Africa, at a time where the current*

---

<sup>113</sup> P16, C&R report.

<sup>114</sup> See paras 95 – 96, Thabametsi judgment.

<sup>115</sup> Para 23 of the Thabametsi judgment states: *“the review undeniably (but not in my opinion illegitimately) is directed at derailing the establishment of the Thabametsi power station by depriving Thabametsi of the environmental authorisation it requires to be appointed as an independent power producer.”*

<sup>116</sup> See <http://www.fin24.com/Economy/Eskom/eskom-faces-rising-surplus-or-plant-closures-20170723-2> and [http://www.miningweekly.com/article/eskom-in-desperate-search-for-industrial-customers-as-surplus-grows-2016-11-04/rep\\_id:3650](http://www.miningweekly.com/article/eskom-in-desperate-search-for-industrial-customers-as-surplus-grows-2016-11-04/rep_id:3650). Although Eskom now appears no longer to publish these briefings on its site, its recent “system status briefings” also made clear that it had surplus capacity and has had surplus capacity since May 2016. Eskom's systems status briefing, showed that Eskom had 11000 MW of excess capacity daily. See <http://www.eskom.co.za/Documents/StateSystemMay2016.pdf> and <http://www.eskom.co.za/news/Pages/Jann24.aspx>; [http://www.eskom.co.za/IR2017/Documents/Eskom\\_integrated\\_report\\_2017.pdf](http://www.eskom.co.za/IR2017/Documents/Eskom_integrated_report_2017.pdf).

<sup>117</sup> See <http://www.fin24.com/Economy/Eskom/eskom-faces-rising-surplus-or-plant-closures-20170723-2>.

*surplus of electricity will decline and / or be non-existent. The need for the project is based on National Policy”;*

96.2. *“In terms of Eskom’s planning, a number of older power stations will be decommissioned from 2020. Notwithstanding Eskom’s decision to extend the lives of some of its old power stations, it must be noted that Thabametsi has been established to further displace the older, similar or less efficient plants over time”;*

96.3. *“While the applicant cannot comment on the research by the CSIR, it is noted that the revised IRP (for the period up to 2050) currently available for public comment, considers the requirements in terms of emission reduction. The awarded IPP projects are considered within the determination of the required energy mix to meet the country’s future electricity requirements as well as these commitments. The choice to continue meeting South Africa’s energy needs with a mix of renewable and non-renewable energy is a legitimate policy decision that has already been executed. Such comments do not have a place in the CCIAR or the PIA. Further, there is conflicting evidence that renewable energy technologies can effectively meet South Africa’s baseload power requirements.”<sup>118</sup>*

97. It is assumed in the CCIAR that Eskom’s old coal-fired fleet will be decommissioned. This, however, is not guaranteed, as we are aware that Eskom is looking into plans to extend the lives of its oldest stations, beyond the dates set for their decommissioning. We also are aware that, at present, Eskom – in its own words - has no plans to decommission its plants, despite the fact that Hendrina and Camden are due to be decommissioned as soon as the year 2020.<sup>119</sup>

98. In its latest integrated report, Eskom confirms that *“no decision on the possible decommissioning of stations has yet been made. Feasibility studies are being undertaken to reassess the lifespan of our power stations, to inform the available options, such as cold reserve, lean preservation, mothballing or decommissioning of stations”*.<sup>120</sup> It also indicates that some (four to six units during weekdays, and up to 14 units over weekends) units are in “cold reserve” - this is when a generator is taken offline but is available to be called into service at short notice (typically 12 to 16 hours). *“Units at Grootvlei and Komati Power Stations have been placed in extended cold reserve with a callback time of five days”*.<sup>121</sup> In addition, Eskom’s report states that *“due to surplus capacity, it is not necessary to run all our existing plant to meet demand. We prioritise which stations to run based on the least-cost merit order dispatch approach. We have identified Hendrina, Grootvlei and Komati as the stations with the biggest cash impact and they will be ramped down to zero production and placed in lean preservation to minimise surplus capacity and optimally manage generation costs: Hendrina in 2018/19, Grootvlei in 2019/20 and Komati in 2020/21. Should demand growth be higher than current assumptions, these stations could be fully recalled to meet demand”*.<sup>122</sup>

99. Furthermore, based on the above information in paragraphs 21 to 34, it is misleading to imply that Thabametsi will be an efficient plant that will be replacing Eskom’s existing fleet. This is clearly incorrect.

100. Six of Eskom’s older plants - Arnot, Camden, Grootvlei, Hendrina, Komati and Kriel, with a combined capacity 10 900 MW, will reach the end of their 50 year lifespans between 2020 and 2026, and are listed for decommissioning during 2020 – 2029 (assuming that Eskom follows the schedule and does not extend their lives).<sup>123</sup> Medupi and Kusile, with a combined capacity of 9 600 MW, are scheduled to be fully online by 2022. Once (and if) Eskom’s old plants have been decommissioned, which will be during the period that South Africa is committed to ‘peaking’ (2020-2025) and then reducing (2025-2050) its GHG emissions, **Thabametsi would**

<sup>118</sup> P16, C&R report.

<sup>119</sup> See <http://ewn.co.za/2017/07/20/eskom-no-plans-to-shut-down-power-stations>.

<sup>120</sup> [http://www.eskom.co.za/IR2017/Documents/Eskom\\_integrated\\_report\\_2017.pdf](http://www.eskom.co.za/IR2017/Documents/Eskom_integrated_report_2017.pdf) p 14.

<sup>121</sup> p 49.

<sup>122</sup> p 47.

<sup>123</sup> Draft IEP 2016, p9; and draft IRP Base Case & Assumptions, p15.

have the worst coal-plant GHG emissions in the country, this being approximately 60% greater than the average of Medupi and Kusile emissions intensities.

101. It is not clear why, nor is it correct that additional coal is needed to replace Eskom's power stations. This can be done more efficiently and more cost-effectively (quite apart from the other benefits) with renewable energy. The arguments that coal is needed to provide baseload electricity are outdated and incorrect.<sup>124</sup> The GHG report, as indicated above, states that all coal plants will have a high significance rating.<sup>125</sup> This however, is not the case for other sources of electricity generation. It is for this reason that other generation sources such as wind and solar needed to be considered as alternatives to Thabametsi. At the very least, the no-go alternative (a scenario which would entail not proceeding with Thabametsi) should have been considered.
102. Commissioning Thabametsi would mean that South Africa would miss the opportunity to replace aging Eskom coal units with renewable resources (such as wind and solar), energy storage, and energy efficiency, each of which is not only cheaper than new coal, but does not emit GHGs nor give rise to the same air pollution, health, water, and land impacts, as coal.

The harm caused by Thabametsi will outweigh any perceived benefits

103. Any benefits assumed to arise from the Thabametsi project would be completely outweighed by the irreversible and long-term harm that would be caused if Thabametsi were to go ahead.
104. Climate scientists continue to provide alarming evidence that we are fast approaching one of several tipping points that would cause irreversible, catastrophic global climate change and would have large, negative impacts for global GDP, which would include the GDP of South Africa – in addition to the devastating impacts for human health and the world in which we live.<sup>126</sup>
105. A recent report by Figueres, C., Schellnhuber, H. J., Whiteman, G., Hobley, A., & Rahmstorf, S. titled 'Three years to safeguard our climate',<sup>127</sup> states:

*"After roughly 1°C of global warming driven by human activity, ice sheets in Greenland and Antarctica are already losing mass at an increasing rate. Summer sea ice is disappearing in the Arctic and coral reefs are dying from heat stress — entire ecosystems are starting to collapse. The social impacts of climate change from intensified heatwaves, droughts and sea-level rise are inexorable and affect the poorest and weakest first."*

*"The magnitude of the challenge can be grasped by computing a budget for CO<sub>2</sub> emissions — the maximum amount of the gas that can be released before the temperature limit is breached. After subtracting past emissions, humanity is left with a 'carbon credit' of between 150 and 1,050 gigatonnes (Gt; one Gt is 1 × 10<sup>9</sup> tonnes) of CO<sub>2</sub> to meet the Paris target of 1.5 °C or well below 2 °C ... The wide range reflects different ways of calculating the budgets using the most recent figures. At the current emission rate of 41 Gt of CO<sub>2</sub> per year, the lower limit of this range would be crossed in 4 years, and the midpoint of 600 Gt of CO<sub>2</sub> would be passed*

---

<sup>124</sup> See, for example: <https://www.aiche.org/chenected/2016/03/chinese-grid-officials-explode-myth-baseload-power-ceraweek>; <https://www.businesslive.co.za/bd/opinion/2017-02-24-need-for-base-load-power-is-a-pro-eskom-fabrication/>; <https://www.rmi.org/news/grid-needs-symphony-not-shouting-match/>; <https://www.nrdc.org/media/2017/170626>; and <http://reneweconomy.com.au/baseload-an-outdated-term-that-should-not-be-confused-with-reliability-34961/>.

<sup>125</sup> P54 & 62, GHG report.

<sup>126</sup> See <https://www.businessgreen.com/bg/blog-post/3014006/why-is-climate-risk-treated-like-the-damp-squib-of-economic-warnings>; <http://nymag.com/daily/intelligencer/2017/07/climate-change-earth-too-hot-for-humans.html>; and Figueres, C., Schellnhuber, H. J., Whiteman, G., Hobley, A., & Rahmstorf, S. (2017). *Three years to safeguard our climate*. Nature, 546(7660), 593-595 available at <https://www.nature.com/news/three-years-to-safeguard-our-climate-1.22201>; <https://www.theguardian.com/environment/2017/jul/20/hell-breaks-loose-tundra-thaws-weatherwatch>

<sup>127</sup> Available at <https://www.nature.com/news/three-years-to-safeguard-our-climate-1.22201>.

*in 15 years. If the current rate of annual emissions stays at this level, we would have to drop them almost immediately to zero once we exhaust the budget.”*

106. If humanity is left with a ‘carbon credit’ of between 150 and 1,050 gigatonnes, then the Thabametsi power plant’s lifetime emissions of roughly 0.3 gigatonnes (297 million tons) would be a substantial portion of this remaining carbon credit. Given that there is no need for the project, it is impossible to justify why valuable GHG emission space should be used by the GHG emissions-intensive Thabametsi, when any electricity needs could be met just as easily by renewable energy sources, which will also bring about socio-economic, health and environmental benefits.
107. South Africa has, in its own climate policy and nationally determined contribution (NDC) under the Paris Agreement, acknowledged that South Africa, as a country, is extremely vulnerable to the impacts of climate change,<sup>128</sup> and that a 2 °C temperature increase translates to a 4 °C increase for South Africa by the end of the century,<sup>129</sup> which would have disastrous implications. Our NDC commitments have been criticised as not being strict enough – as, if all other countries applied the same commitments, we would see a global temperature increase exceeding 4 °C instead of the intended 2 °C restriction.<sup>130</sup> Yet, there are concerns that we are not even on track to meeting our weak NDC commitments.<sup>131</sup>
108. These concerns have been addressed in all of our previous comments in relation to the CCIA, which we reiterate.
109. A recent government report, "The State of Climate Change Science and Technology in South Africa" undertaken by the Academy of Science of South Africa (ASSAf) on behalf of the Department of Science and Technology, which has been completed and endorsed by Cabinet, highlights the key climate change challenges and impacts in South Africa over the next 30 years. The report states that “[t]he strongest impacts of climate change in South Africa in the first half of the 21st century will be on the security of freshwater supplies to industry, towns and agriculture; on crop and livestock agriculture, due to less favourable growing conditions; on human health, due to heat stress and disease spread, particularly in urban areas; and on biodiversity, due to shifting habitat suitability.”<sup>132</sup> Further climate change impacts on South Africa include sea level rise,<sup>133</sup> which will impact, particularly on densely populated metropolitan areas such as eThekweni, Nelson Mandela Bay and Cape Town.
110. These are significant impacts, which require serious and urgent measures so that they can be mitigated and avoided. Instead, the C&R report states, “... the Paris Agreement remains an International Agreement, the provisions of which have not been fully incorporated into South African law. Further, it must be emphasised that South Africa is a developing country and the establishment of the power station is pursuant to legitimate government policy which remains legally unchallenged and which calls for the establishment of the power station, in the context of considerations of South Africa's international climate change obligations.”<sup>134</sup>

<sup>128</sup> P8, National Climate Change Response White Paper, available at [https://www.google.co.za/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=national+climate+change+response+white+paper&\\*](https://www.google.co.za/webhp?sourceid=chrome-instant&ion=1&espv=2&ie=UTF-8#q=national+climate+change+response+white+paper&*.).

<sup>129</sup> P1, NDC, available at <http://www4.unfccc.int/ndcregistry/PublishedDocuments/South%20Africa%20First/South%20Africa.pdf>.

<sup>130</sup> See <http://climateactiontracker.org/countries/southafrica.html>.

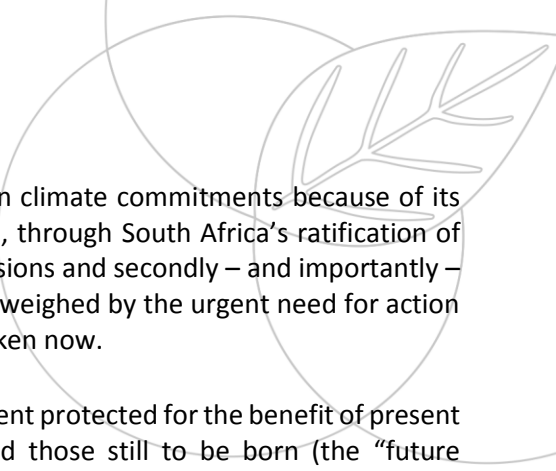
<sup>131</sup> See p30, ‘Challenges associated with implementing climate change mitigation policy in South Africa’, [http://www.erc.uct.ac.za/sites/default/files/image\\_tool/images/119/Papers-2017/17-Trollip-Boullé-Challenges\\_implementing\\_climate\\_change\\_mitigation\\_policy.pdf](http://www.erc.uct.ac.za/sites/default/files/image_tool/images/119/Papers-2017/17-Trollip-Boullé-Challenges_implementing_climate_change_mitigation_policy.pdf) and p5 [http://www.erc.uct.ac.za/sites/default/files/image\\_tool/images/119/Papers-2016/2016-Burtonetal-Impact\\_stranding\\_power\\_sector\\_assets.pdf](http://www.erc.uct.ac.za/sites/default/files/image_tool/images/119/Papers-2016/2016-Burtonetal-Impact_stranding_power_sector_assets.pdf).

<sup>132</sup> P15, available at <http://www.dst.gov.za/images/2017/ASSAf-State-of-Climate-Change.pdf>.

<sup>133</sup> Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change”. Table SPM.2, Pierre Mukheibir and Gina Ziervogel, 2006. Available at [http://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5\\_SPM\\_FINAL.pdf](http://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_SPM_FINAL.pdf).

<sup>134</sup> P14, C&R report.



- 
111. The arguments around South Africa being entitled to take a backseat in climate commitments because of its ‘developing country status’ can no longer be accepted. Firstly because, through South Africa’s ratification of the Paris Agreement, government has committed to mitigating its emissions and secondly – and importantly – there is no longer any room for this argument. It is overwhelmingly outweighed by the urgent need for action and the devastating impacts that will ensue if adequate steps are not taken now.
112. Section 24 of the Constitution entrenches the right to have the environment protected for the benefit of present **and future** generations. Yet the generations that are born today and those still to be born (the “future generations” envisaged by the environmental right) will have to bear the worst impacts of climate change and the effects of emissions from power stations such as Thabametsi.
113. There are additional harmful socio-economic consequences that are likely to arise if Thabametsi goes ahead. In the FSR comments, we pointed out that fossil fuel projects run the high risk of becoming stranded assets, with severe economic and environmental consequences. We referred to a study by the Energy Research Centre titled ‘The Impact of Stranding Power Sector Assets in South Africa’, which states that *“(g)iven that the recently negotiated outcome of the UNFCCC’s Paris Agreement will require commitment even from developing countries to reduce their greenhouse gas emissions, continued investment in high-emitting infrastructure may create costly risks for South Africa in the future ... Investing in new coal-fired assets in the short-term may well prove costly in the longer-term, as the risk associated with not recouping those investments due to policy shifts or technology changes grows higher, especially for plants built after Medupi.”*<sup>135</sup>
114. Furthermore, the Intergovernmental Panel on Climate Change (IPCC) 5th Assessment Report, states that *“Infrastructure developments and long-lived products that lock societies into GHG-intensive emissions pathways may be difficult or very costly to change, reinforcing the importance of early action for ambitious mitigation (robust evidence, high agreement). This lock-in risk is compounded by the lifetime of the infrastructure, by the difference in emissions associated with alternatives, and the magnitude of the investment cost.”*<sup>136</sup>
115. It is clear, from a 2017 report by Greenpeace, the US-based Sierra Club and research network CoalSwarm titled ‘Boom and Bust 2017: Tracking the Global Coal Plant Pipeline’,<sup>137</sup> that, in line with the above, there has been a significant decline in the development of coal-fired power stations. It states that *“the amount of coal power capacity under development worldwide saw a dramatic drop in 2016, mainly due to shifting policies and economic conditions in China and India ... The drop occurred in all stages of coal plant development ...”*.<sup>138</sup> It notes that the amount of new coal capacity starting construction was down 62% in 2016 on the year before, and work was stopped at more than a hundred sites in China and India.<sup>139</sup> The report estimates that only about 20% of coal-fired power plants currently in the pre-construction phase will eventually be built, due to the falling cost of renewables and the difficulties in financing coal plants.<sup>140</sup> Plants like Thabametsi, which are built, despite these inevitabilities, run the high risk of becoming stranded assets – costly and of no benefit to the South African public. This would be contrary to the NEMA principle which requires that development must be socially, environmentally and economically sustainable.<sup>141</sup>
116. It is relevant that the GHG report acknowledges that, as a signatory to the Paris Agreement, South Africa is obliged to submit new NDCs every 5 years and that such NDCs must be more ambitious than the previous

---

<sup>135</sup> P4, [http://www.erc.uct.ac.za/sites/default/files/image\\_tool/images/119/Papers-2016/2016-Burtonetal-Impact\\_stranding\\_power\\_sector\\_assets.pdf](http://www.erc.uct.ac.za/sites/default/files/image_tool/images/119/Papers-2016/2016-Burtonetal-Impact_stranding_power_sector_assets.pdf).

<sup>136</sup> P18, Climate Change 2014: Mitigation of Climate Change Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.

<sup>137</sup> Available at <http://endcoal.org/wp-content/uploads/2017/03/BoomBust2017-English-Final.pdf>.

<sup>138</sup> P3, <http://endcoal.org/wp-content/uploads/2017/03/BoomBust2017-English-Final.pdf>.

<sup>139</sup> See <https://www.theguardian.com/environment/2017/mar/22/coal-power-plants-green-energy-china-india>.

<sup>140</sup> P14, <http://endcoal.org/wp-content/uploads/2017/03/BoomBust2017-English-Final.pdf>.

<sup>141</sup> S2(3), NEMA.

submissions. The GHG report states “as such, future emission trajectories may incorporate increasingly ambitious cuts”.<sup>142</sup>

117. South Africa will be required to improve on its targets, and this, in all likelihood will mean moving its emissions trajectory closer to the ‘required by science’ curve that will seek to avoid exceeding the 2 °C global temperature rise. This means that the proportional contribution of Thabametsi to national GHG emissions will become significantly greater. At some point during Thabametsi’s 30 year life, the plant’s output may have to be curtailed because of its GHG emissions. **There is a real risk**, as discussed in paragraph 59 of the draft CCIA and PIA comments, **that Thabametsi will be unable to operate for the remainder of its intended operational lifespan.**
118. We note that if Thabametsi is permitted and enabled to continue emitting GHGs as anticipated up until 2050, **this will take South Africa beyond the peak plateau decline (PPD) trajectory as set out in the NDC**, as emissions are required to decline from 2035. Furthermore, there are additional sources (such as Thabametsi’s own final EIR) which anticipate Thabametsi having a 40 year lifespan – meaning even longer-term emissions.
119. **If Thabametsi is allowed to proceed, at a time when South Africa is committed and legally obliged to urgently reduce its emissions, the DEA would be authorising what will be one of the worst GHG emitters in the country and in the world,<sup>143</sup> and with no means of reducing these emissions.** This would be a clear contravention of the Constitution and NEMA. In this instance, our client’s rights are fully reserved.

#### **Our client’s submissions on the PIA**

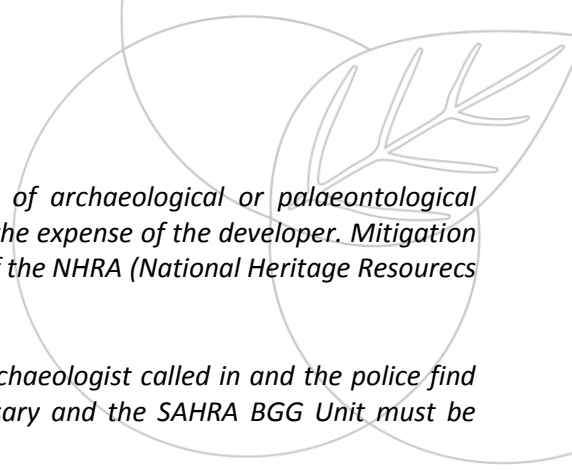
120. In the draft CCIA and PIA comments, we noted the risks of: damage or destruction to fossil materials during construction of Thabametsi (which impact could be significant with “irreversible damage”); the movement of fossils during construction; and the loss of access to fossil materials, for scientific study, which are beneath infrastructural elements. It was pointed out that much depends on the adequate implementation of mitigation procedures and proper monitoring of such procedures by the South African Heritage Resources Agency (SAHRA). If adequate steps are not taken by Thabametsi and SAHRA, this could result in irreversible damage to, and loss of valuable heritage resources. It is therefore vital that proper mitigation measures be put in place; that these measures be strictly complied with; and that regular monitoring be conducted by SAHRA as required.
121. We note that the C&R report states that, even though the severity of any impact is potentially extremely high, such negative impacts can be minimised by the implementation of adequate damage mitigation procedures.<sup>144</sup> It is not clear what these damage mitigation procedures are and how effectively they will be implemented.
122. We note further, according to the C&R report, that SAHRA made its own additional comments and recommendations on the PIA, in February 2017, including *inter alia* that:
  - 122.1. “[i]n addition to monitoring as requested in the Final comment, the ECO [environmental control officer] must undertake (sic), a report on the monitoring must be submitted to the case, outlining any excavations through the sediments of the Karoo Supergroup and Cenozoic regoliths. The report should include photos of any fossil uncovered”;
  - 122.2. “[i]f any newly discovered heritage resources during construction and operation phases of the proposed development, then a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the findings at the expense of the developer”;

---

<sup>142</sup> P53, GHG report.

<sup>143</sup> P19, [https://www.ipcc.ch/pdf/special-reports/srren/SRREN\\_FD\\_SPM\\_final.pdf](https://www.ipcc.ch/pdf/special-reports/srren/SRREN_FD_SPM_final.pdf).

<sup>144</sup> Item 96, p20, PIA.



122.3. “[i]f the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required at the expense of the developer. Mitigation will only be carried out with a permit in terms of section 35 of the NHRA (National Heritage Resources Act) (Act 25 of 1999) ...”; and

122.4. “[i]f any unmarked human burials are uncovered and the archaeologist called in and the police find them to be heritage graves then mitigation may be necessary and the SAHRA BGG Unit must be contacted for processes to follow ...”.<sup>145</sup>

123. The C&R report’s response to these comments is that “Recommendations made by SAHRA have been included within the EMPr.”<sup>146</sup> These recommendations do appear to have been included with responsibility being allocated to a palaeontologist, archaeologist, or suitably qualified person – as the circumstances require – presumably to be appointed and paid by Thabametsi.

124. We trust that these recommendations and requirements will be duly followed. We place on record, however, our client’s concern for the irreversible impacts that would ensue in the event of a failure of any of the proposed mitigation measures.

## Conclusion

125. In conclusion we submit, in relation to the CCIA, that:

125.1. the CCIA, while fairly thorough, still fails to meet the requirement of a **full** CCIA as confirmed by the High Court in the Thabametsi case as numerous considerations are still outstanding such as, *inter alia*: the social cost of Thabametsi’s GHG emissions; how Thabametsi will exacerbate the vulnerability of communities and the environment to climate change impacts (i.e. resilience of the environment and people of Lephalale to climate change); and any proper measures to avoid the harmful impacts of the power station (including the no-go option); and

125.2. based on the significant climate impacts, as evidenced in the CCIA, and the lack of any substantive means to mitigate these impacts, NEMA and the Constitution would require that the power station not go ahead. This is particularly the case given that any benefits to be derived from the power station would be strongly outweighed by the harm.

126. The summary report’s conclusion that Thabametsi’s impacts are expected to be of medium to low significance with the implementation of appropriate mitigation measures, when in fact no adequate mitigation measures are proposed that will reduce the extremely high GHG emissions of Thabametsi, is unacceptable and, we submit, unlawful.

127. In the circumstances, it is our recommendation that the Minister set aside Thabametsi’s EA on the basis of the significant and unacceptable climate impacts of Thabametsi, as explained above.

Yours faithfully

**CENTRE FOR ENVIRONMENTAL RIGHTS**

---

<sup>145</sup> P1-2, C&R report.

<sup>146</sup> P2, C&R report.



per:

**Nicole Loser**  
**Attorney**

Direct email: [nloser@cer.org.za](mailto:nloser@cer.org.za)

