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Our ref: CER12.4/RH
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Dear Madam

RECOMMENDATIONS FOR THE CLIMATE CHANGE IMPACT ASSESSMENT TO BE CONDUCTED BY THABAMETSI POWER PROJECT (PTY) LTD

1. We address you on behalf of our client, Earthlife Africa, Johannesburg (ELA), with reference to the Proposed Scope of Work: Additional Studies (the scoping report or "SR") prepared for Newshelf 1282 (Pty) Ltd (now Thabametsi Power Project (Pty) Ltd ("Thabametsi")), which was made available for comment on 22 April 2016.

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Introduction

2. The submissions herein relate to the 7 March 2016 decision on the appeal of the integrated environmental authorisation (EA) granted to Thabametsi on 25 February 2015 ("the appeal decision"), for the proposed establishment of a 1200MW coal-fired power station and associated infrastructure near Lephalale, Limpopo ("the project").

3. As part of the appeal decision, the Minister required, *inter alia*, that, within 6 months of the appeal decision, Thabametsi conduct a climate change impact assessment (CCIA), as well as a palaeontological impact assessment report (PIAR), in relation to the project.

4. We note, however, that the appeal decision has not prescribed how the CCIA should be conducted, nor what impacts it should consider.

5. Our client's rights to take the Minister's appeal decision on review remain fully reserved. The following submissions are made without prejudice to those rights. Nonetheless, our client recognises the need for the CCIA to be conducted properly, irrespective of the outcome of any potential litigation.

6. A letter from the Department of Environmental Affairs (DEA): Director of Appeals and Legal Review, of 24 March 2016, in response to our letter to the Minister of 23 March 2016, confirmed that the CCIA will "*be subject to scoping, public comment and assessment as per the Environmental Impact Assessment Regulations, 2010*". We note that you were copied on this correspondence.

7. In accordance with the above and in terms of regulations 29 and 56(1) of the National Environmental Management Act (NEMA): Environmental Impact Assessment (EIA) Regulations, 2010[1] ("the EIA Regulations"), our client, and all interested and affected parties (I&APs), must have an opportunity to comment on, in addition to the SR, the draft and final CCIA and PIAR to be submitted to DEA.

8. We submit herein our comments on the SR. In addition, as the required CCIA (in the context of the EIA for a coal-fired power station) is relatively new in South Africa, we are instructed to make particular recommendations on the scope for the CCIA based on international best practice, to ensure that the CCIA will be a comprehensive and accurate assessment of the climate change impacts of the project, which meets the requirements of NEMA and s24 of the Constitution.

9. With the above in mind, we refer below to other jurisdictions where climate change considerations are taken into account in assessing the impacts of proposed developments. The European Union, the Republic of Kiribati, and the Republic of Vanuatu have amended their EIA laws to specifically require that climate change effects are evaluated. Canada and Fiji have also published guidance documents directing project applicants to conduct climate change analyses, although they have not formally amended their EIA statutes or regulations.[2]

The Climate Change Impact Assessment

Context for the Climate Change Study

10. We and our client have always maintained that, as NEMA s24(4)(a)(iv) requires that an EIA process ensures investigation into the potential consequences for or impacts of a listed activity on the environment, and regulation 31(2)(l) of the EIA Regulations requires an environmental impact report to contain an assessment of each

[1] Published under GN R543, GG 33306 of 2 August 2010.
[2] Ibid at page 10.

identified potentially significant impact, it is clear that climate change impacts of proposed listed activities must, as a rule, be evaluated in the EIA process.

11. The CCIA must therefore fully consider the climate change impacts relating to the project, and with this in mind, we make the recommendations set out below.

12. The NEMA principles, set out in s2 of NEMA, apply to the actions of all organs of state and must guide the implementation not only of all environmental laws, but all decisions taken in terms thereof. S2(4) states that sustainable development requires consideration of all relevant factors, including that global and international responsibilities relating to the environment must be discharged in the national interest.[3]

13. We note that the SR refers to the state's climate change commitments outlined in South Africa's National Climate Change Response Policy (NCCRP) (encompassed in the National Climate Change Response White Paper) and refers to South Africa's commitments as a party to the United Nations Framework Convention on Climate Change. The SR fails, however, to make specific mention of South Africa's Intended Nationally Determined Contribution (INDC),[4] which sets out South Africa's commitments under the Paris Agreement (to which South Africa recently became a signatory).

14. We point out that the INDC has committed to South Africa's emissions between the years 2025 and 2030, being in a range between 398 and 614 megatonnes of CO2 equivalent. This, according to the INDC, is the benchmark against which the efficacy of mitigation actions will be measured. The INDC also states that "*South Africa's mitigation component of its INDC moves from a "deviation from business-as-usual*" form of commitment and takes the form of a peak, plateau and decline greenhouse gas (GHG) emissions trajectory range.

15. Notably, the Paris Agreement places obligations on parties to:
    15.1. undertake and communicate (as nationally determined contributions (NDCs)) ambitious efforts with a view to achieving the purpose of the Paris Agreement;[5]
    15.2. every 5 years, [6] prepare, communicate and maintain successive NDCs that each party intends to achieve. Parties shall pursue domestic mitigation measures with the aim of achieving the objectives of such contributions,[7] and each successive NDC will represent a progression beyond the party's then current NDC and reflect its highest possible ambition;[8] and
    15.3. account for their NDCs. In accounting for anthropogenic emissions and removals corresponding to their NDCs, parties shall promote environmental integrity, transparency, accuracy, completeness, comparability and consistency, and ensure the avoidance of double counting.[9]

16. In our client's appeal, we referred to the NCCRP which acknowledges, among other things, that "*South Africa is a water scarce country with a highly variable climate and has one of the lowest run-offs in the world – a situation that is likely to be significantly exacerbated by the effects of climate change*."[10] The NCCRP also acknowledges that "*under a drier future scenario, significant trade-offs are likely to occur between developmental aspirations, particularly in terms of the allocation between agricultural and urban industrial water use, linked to the marginal costs of enhancing water supply. These constraints are most likely to be experienced in central, northern and south-western parts of South Africa, with significant social, economic and ecological consequences through restricting the range of viable national development pathways*." [11]

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[3] NEMA s 2(4)(n).
[4] Available at http://www4.unfccc.int/submissions/INDC/Published%20Documents/South%20Africa/1/South%20Africa.pdf.
[5] Article 3.
[6] Article 4(9).
[7] Article 4(2).
[8] Article 4(3).
[9] Article 4(13).
[10] Page 17, Section 5.2: Water, National Climate Change Response White Paper.
[11] Page 6, Long Terms Adaptation Scenarios: Summary for Policy Makers, October 2013.

17. While we do not intend to repeat all the relevant provisions and obligations set out in the NCCRP, we point out that the relevant decision-maker, in considering the CCIA, must take the NCCRP into account, as is required by s24O(1)(b)(viii) of NEMA.[12] The CCIA should therefore indicate in what respects the projected emissions and impacts of the project would contradict the NCCRP, the current INDC and the Paris Agreement.

18. While the obligations and commitments under the INDC and Paris Agreement are fundamental steps towards South Africa's GHG emission reduction obligations, both the Paris Agreement and the INDC have been the subject of criticism for not being strict enough to deter the impending impacts of climate change. Many scientists concur that even 2 degrees Celsius temperature increase will be catastrophic for South Africa.[13] Therefore, even with our INDC commitments in place, more action is required to mitigate against the impacts that will result from climate change.

19. We note that the SR also makes reference to the Department of Energy's (DoE) Integrated Resource Plan (IRP), which runs "in parallel" with South Africa's NCCRP. We acknowledge the substantial misalignments between policies and we and our client have always regarded this as a substantial problem from a regulatory perspective. In any event, as we have submitted in the appeal and in our client's answering statement, the IRP is outdated and should have, in terms of its own provisions, been updated 3 years ago.[14] This has still not happened, and we submit that the reference to the IRP in the SR, should at least, acknowledge this fact and the significant shift in climate change and energy developments since the IRP came into effect. In this regard, we point out that, in a press release of 11 May 2016, the Minister of Energy, in the Energy Department Budget Speech Vote 2016-2017, indicated that the "*updated IRP process is well underway, and will be submitted to the economic sector and infrastructure development cluster in the second quarter of this financial year*".[15] The demand for electricity must not be confused with a 'need' for the electricity to be coal-based. Any reliance on the IRP in the CCIA would be misplaced and legally incorrect, as it can have no bearing on the need and desirability for the project, nor can the existence of the IRP have any relevance for the climate change impacts relating to the project.

Submissions on the Proposed Scope of Work for the CCIA

20. As it stands, the current SR proposes only a simple GHG emissions and impact assessment. The proposed outcome of this work, according to the SR "*will be a greenhouse gas assessment (in report format) for the power plant. This will include estimated annual GHG emissions from the plant, an assessment of the magnitude of the climate change impact of these emissions, and the recommendation of emissions management measures*." Such an assessment is inadequate and would not result in a comprehensive climate change impact assessment, which is what the nature and extent of the proposed project requires. Moreover, such a narrow assessment is inconsistent with global climate change assessment practice.

21. In particular, the SR makes no mention of an assessment of the impacts that climate change will have for the project and its intended operation or how the project's impact on South Africa's environment and society will be affected further by climate change. It is necessary that these aspects also be assessed. Other jurisdictions, such as the USA and the European Union (EU), have acknowledged the need for a wide set of considerations to be taken into account in the assessment of climate change impacts.

[12] This provisions provides that the Minister, in considering the application, must take into account all relevant factors including any guidelines, departmental policies, and environmental management instruments.
[13] See http://www.un.org/en/globalissues/climatechange/ ; http://www.thecvf.org/20-nation-forum-questions-unfccc-2-degrees-goal/ and http://www.bizcommunity.com/Article/196/508/84981.html
[14] The IRP was intended to be a "living plan" which would be revised by the DoE every two years, meaning that an update was required by 2013 (the IRP itself indicates that it would be revised in 2012). Although an IRP update report was published for comment in 2013, it appears to have been abandoned.
[15] http://allafrica.com/stories/201605111410.html

22. For example, the USA's Council on Environmental Quality (CEQ)[16] published, after public review and comment, a "Revised Draft Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews".[17] The draft Guidance[18] aims to provide federal agencies direction on when and how to consider the effects of GHG emissions and climate change in their evaluation of all proposed federal actions, in accordance with the National Environmental Policy Act (NEPA) and the CEQ Regulations.[19] It requires that federal agencies consider both: (1) the potential effects of a proposed action on climate change as indicated by its GHG emissions; and (2) the implications of climate change (for example water scarcity) for the environmental effects of a proposed action, when addressing climate change.

23. It is worth noting that the draft Guidance:
    23.1. sets out an obligation to consider "*the ways in which a changing climate over the life of the proposed project may alter the overall environmental implications of such actions*;"[20]
    23.2. requires that a GHG assessment discuss direct, indirect, and cumulative impacts analysis of a proposed action's reasonably foreseeable emissions and effects; [21]
    23.3. requires the taking into account of both the short- and long-term effects and benefits of a proposed project, based on what the agency determines is the life of a project and the duration of the generation of emissions;[22]
    23.4. instructs agencies to consider how climate change may alter: the affected environment; the environmental impacts of the proposed action; and the environmental impacts of alternatives to the proposed action. For example, agencies should consider the extent to which climate change may "*increase the vulnerability of a resource, ecosystem, human community*" within the affected environment of the project, both to establish baseline conditions and to determine if these resources will be more susceptible to impacts or risks posed by the project;[23] and
    23.5. by requiring agencies to assess the implications of climate change for the proposed action, the draft Guidance enables agencies to select alternatives that are more resilient to the changing climate.

24. The European Commission (EC) Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment[24] requires an assessment of both a project's impact on climate change (i.e. mitigation aspects) and the impact of climate change on the project and its implementation (i.e. adaptation aspects).

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[16] CEQ coordinates federal environmental efforts and works closely with agencies and other White House offices in the development of environmental policies and initiatives.

[17] Published in December 2014 and available at https://www.whitehouse.gov/sites/default/files/docs/nepa_revised_draft_ghg_guidance_searchable.pdf

[18] Although the Revised CEQ Draft Guidance has not been finalised, it has been influential. Many federal government agencies rely on it when preparing climate change assessments as part of the environmental review process under the National Environmental Policy Act (NEPA). *See e.g.* Jessica Wentz, Grant Glovin, and Adrian Ang, *Survey of Climate Change Considerations in Federal Environmental Impact Statements, 2012-2014*, Sabin Center for Climate Change Law (February 2016), http://web.law.columbia.edu/sites/default/files/microsites/climate-change/survey_of_climate_change_considerations_in_federal_environmental_impact_statements_2012-2014.pdf. In addition, courts reviewing challenges to federal government environmental reviews have also referred to the CEQ Draft Guidance – see, for example: *WildEarth Guardians v. Jewell*, 738 F.3d 298, 309 (D.C. Cir. 2013) (which found the Draft Guidance "useful" in interpreting NEPA); *Save Strawberry Canyon v. U.S. Department of Energy*, 830 F. Supp. 2d 737, 755-6 (N.D. Cal. 2011) (which found the federal agency's climate change assessment "sufficient" because it looked to [draft] guidance to conduct its analysis).

[19] CEQ Draft Guidance (2014) Introduction, page 1.

[20] CEQ Draft Guidance (2014), page 8 at para III.

[21] CEQ Draft Guidance (2014), page 10.

[22] CEQ Draft Guidance (2014), page 12. The draft Guidance provides an example to illustrate this: the development of a coal resource on tribal trust lands or approval of solar energy development zones may offer important short-term socio-economic benefits to a particular community or region, at the same time that the development produces GHG emissions with potential long-term climate change impacts.

[23] CEQ Draft Guidance (2014), page 22.

[24] Available at http://ec.europa.eu/environment/eia/pdf/EIA%20Guidance.pdf.

25. The EC Guidance provides a list of key questions for identifying climate change adaptation issues, and lists the considerations that should factor into the assessment of climate change impacts on the environmental baseline, the vulnerability of built infrastructure, and adaptation opportunities.[25] The EC Guidance states that, in assessing the effects related to climate change in an EIA one must, *inter alia*:
    25.1. consider climate change scenarios at the outset including extreme climate scenarios and 'big surprises';
    25.2. analyse evolving environmental baseline trends;
    25.3. take an integrated approach to planning and assessment, investigating relevant thresholds and limits;
    25.4. seek to avoid biodiversity and climate change effects from the start, before considering mitigation or compensation; and
    25.5. assess alternatives that make a difference in terms of climate change and biodiversity.[26]

26. The EC, in its Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment,[27] lists Key Considerations for Scoping - which our client recommends be taken into account for purposes of finalising the SR for the CCIA – by asking the following questions: "*(1) What are the key climate change and biodiversity issues likely to be? (2) Who are the key stakeholders and environmental authorities with an interest in climate change and biodiversity and how will they be involved in the EIA? What do they think are the key issues? (3) What is the current situation relating to climate change and biodiversity and how is it likely to change in the future? (4) What is the climate change and biodiversity policy context, what are the objectives and targets?*"[28]

27. In line with the approaches followed by the USA, the EU, and many other jurisdictions, as well as the requirements of NEMA, the NNCRP and South Africa's international commitments, the CCIA must consider several aspects of the relationship between the proposed project and climate change, including:
    27.1. the project's direct impacts on climate change;
    27.2. 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
    27.3. how the project's impact on South Africa's environment and society will be affected further by climate change, i.e. the ways in which the proposed project would impact on South Africa's own necessary adaptations to a changed climate.

28. As we describe below, such an approach is consistent with emerging global practice in this area. With this in mind, we address each proposed task under the SR.

Task 1 – Boundary Definition

29. According to the SR, this is "*the boundary within which the carbon footprint of the plant will be calculated at this stage*".

30. We point out, in this regard, the transboundary nature of GHG emissions. While we do not intend to delve into an explanation of how GHG emissions contribute to global warming, the fact that emissions in South Africa will have impacts across the world means that the boundary definition cannot be confined strictly to a set radius around the proposed project.

31. The SR further proposes that the "*assessment be focused on GHG emissions during the operational phase, since GHG emissions from the construction phase are likely to be minimal in comparison*."

32. It is our client's contention that, in order to obtain a holistic assessment of the project's GHG emissions, the pre-operation phase must also be considered, and that the emissions from this phase of the project will not be

[25] See page 10 of the EC Guidance which provides a step-by-step guide on how to assess the effect related to climate change, available at http://ec.europa.eu/environment/eia/pdf/EIA%20Guidance.pdf.
[26] EC Guidance page 10.
[27] Available at http://ec.europa.eu/environment/eia/pdf/EIA%20Guidance.pdf.
[28] EC Guidance page 12.

minimal. The production of concrete and other building materials are major sources of GHG emissions. There will also be substantial emissions arising from the transportation of materials and waste during the construction phase.

33. We and our client further submit that the boundary must take cognisance of activities giving rise to indirect emissions, namely mining and transportation of the coal needed for the operation of the project.

Task 2 – GHG Baseline Study

34. The SR states that the GHG baseline study will "*focus on quantifying (and projecting) South Africa's national annual GHG emissions, and will present a magnitude scale for project-wide GHG emissions based on a number of standards from international lender organisations or groupings*".

35. A 2015 report by the Sabin Center for Climate Change Law at Columbia Law School[29] titled "Assessing the Impacts of Climate Change on the Built Environment under NEPA and State EIA Laws: A Survey of Current Practices and Recommendations for Model Protocols"[30] states that *"(a)n accurate impact assessment … requires an accurate characterization of the baseline environment. To the extent that climate change may influence that baseline, it should factor into the environmental review process. This means that decision-makers should account for the impacts of climate change when describing the natural resources, ecosystems, and communities that will be affected by a project*."[31]

36. Therefore, in line with the Sabin Center's report, we and our client submit that the baseline study for the CCIA must not be limited only to the project's GHG emissions, in comparison with national GHG emissions, but it must consider the baseline environment – this being the environment as it is without climate change impacts. Only then can the climate change impacts associated with the project be properly assessed.

37. The CCIA must accurately describe the baseline (pre-climate change) environment, and then address how climate change may affect that environment (including how it is already affecting it). This is relevant both to assessing the additional impact of the project on those climate-related impact and in assessing the effect of other aspects of this project on the environment. For example, drawing 1 300 000m^3 per annum - the total estimated water demand for the project[32] - from the baseline environment, will already have an impact on the baseline environment. But that does not take into account the impacts that climate change will have (and is already having) on the water resources in the proposed project area. A correct assessment would be to assess what drawing 1 300 000m^3 per annum of water will do to the environment as it is being - and will further be - changed by climate change.

Task 3 – Data Collection and Carbon Footprint Calculation

38. The SR states that "*documentation from the … (EIA) and feasibility study will be reviewed in order to identify key GHG emission sources from the power plant. If required, a (sic) separate additional information on energy consumption/GHG emissions will be collected*".

[29] The Sabin Center for Climate Change Law at Columbia Law School works in conjunction with renowned scientists of Columbia University's Earth Institute, and in close cooperation with governmental and nongovernmental organisations grappling with the legal and policy issues raised by climate change. The Center develops legal techniques to fight climate change, trains law students and lawyers in their use, and provides the public with up-to-date resources on key topics in climate law and regulation. For more information see http://web.law.columbia.edu/climate-change/about-center.

[30] Available at https://web.law.columbia.edu/sites/default/files/microsites/climate-change/assessing_the_impacts_of_climate_change_on_the_built_environment_-_final.pdf.

[31] See https://web.law.columbia.edu/sites/default/files/microsites/climate-change/assessing_the_impacts_of_climate_change_on_the_built_environment_-_final.pdf at page 5.

[32] Page 19 of the Surface Water Assessment Specialist Report of the Final Environmental Impact Report

39. It is vital that the projected GHG emissions of the project be accurately and comprehensively calculated. A comprehensive assessment requires consideration of the project's cumulative emissions,[33] as well as the life-cycle emissions of the project – commencing from the construction and pre-operation phase of the project to the end of the project's lifetime and decommissioning.

40. In this regard, we refer to the Greenhouse Gas Protocol developed by the World Resource Institute (WRI) and the World Business Council on Sustainable Development (WBCSD), which sets a global standard on how to measure, manage, and report GHG emissions. This is a widely-used international accounting tool for identifying, quantifying, and managing GHG emissions and it serves as a foundation for other GHG reporting standards.[34]

41. An alternative and commendable methodology for the calculation of the project's GHG emissions would the Intergovernmental Panel on Climate Change's (IPCC) 2006 Guidelines for National GHG Inventories for Energy.[35] This appears to be the methodology prescribed by government for the calculation of GHG emissions in the Draft National GHG Emission Reporting Regulations.[36]

42. Our client would have no objection to either the GHG Protocol or the IPCC Guideline methodologies being applied in the calculation of the project's GHG emissions, and recommends that due consideration be given to the standards and measures prescribed in both.

43. We also point out that an assessment of the project's carbon footprint should consider the external costs associated with climate change impacts. In this regard, we refer to the USA's social cost of carbon protocol (SCC)[37] for assessing climate impacts, which is intended to be a comprehensive estimate of climate change damages. It includes, among other things: changes in net agricultural productivity, human health, property damages from increased flood risk, and the value of ecosystem services - all of which climate change can degrade. Although the SCC does not currently include all of the relevant damages, it is a useful method for estimating the damages associated with even a small increase in CO2 emissions - conventionally one metric ton - in a given year, and represents the value of damages avoided for a small emission reduction (i.e. the benefit of a CO2 reduction).[38]

44. Annex 3 of the EC Guidance, referred to above, provides for the assessing of a project's carbon footprint,[39] including links to a methodology for calculating absolute and relative GHG emissions piloted by the European Investment Bank (EIB).[40] It is recommended that this methodology be taken into account as well.

Task 4 - Impact Assessment

45. The SR states that "*in this task, the GHG (or climate change) impact associated with the power plant will be assessed by comparing projected annual GHG emissions from the project (as quantified in Task 3) with South Africa's baseline and projected GHG emissions, and through a comparison against a GHG magnitude scale based on various lender standards (as analysed in Task 2). In addition, the emission intensity of the electricity generated (i.e. tCO2e emitted per kWh of electricity generated) can be benchmarked against other facilities / against the grid emissions factor for Eskom. Relevant aspects relating to South Africa's climate change and energy policy will also be used during the analysis*."

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[33] Cumulative emissions entail, inter alia, the emissions from the associated coal-mining and transportation of coal and building materials needed for the project's operation

[34] Available at http://www.ghgprotocol.org/.

[35] See Volume 2 available at http://www.ipcc-nggip.iges.or.jp/public/2006gl/vol2.html.

[36] Published in GN 541 (GG 38857) on 5 June 2015.

[37] The protocol was developed by a working group of USA federal agencies, including the U.S. Department of Agriculture. See https://www3.epa.gov/climatechange/Downloads/EPAactivities/scc-fact-sheet.pdf.

[38] See page 23 http://www.wildearthguardians.org/site/DocServer/Comments_of_HCCA_et_al_on_scoping_-_Colorado_Roadless_Ru.pdf?docID=16122.

[39] See page 53 ibid and http://www.eib.org/about/documents/footprint-methodologies.htm.

[40] See page 53 ibid and http://www.eib.org/about/documents/footprint-methodologies.htm.

46. This is far too narrow an assessment, and at odds with global practice in this area.

47. The USA draft Guidance acknowledges the broad nature of climate change impacts and states that, "*the statement that emissions from a government action or approval represent only a small fraction of global emissions is more a statement about the nature of the climate change challenge, and is not an appropriate basis for deciding whether to consider climate impacts under NEPA. Moreover, these comparisons are not an appropriate method for characterizing the potential impacts associated with a proposed action and its alternatives and mitigations*."[41]

48. The Sabin Center for Climate Change Law has developed a set of model protocols for assessing the impacts of climate change on the built environment – these are contained in Sabin's report referred to above. The model protocols are based on the legal and empirical research presented in the report, and on input from a Stakeholder Workshop hosted by the Sabin Center in June 2015 to discuss various opportunities and challenges associated with the consideration of climate change impacts.[42]

49. The Sabin Center report makes the following recommendations on considerations that should be taken into account in assessing the impacts of climate change:
"*a. Future baseline: Whether climate change may influence the future baseline conditions which would exist in the absence of the proposed action (the no action alternative).*
b. Project description: Whether the project may be vulnerable to the impacts of climate change, taking into account the location of the project, the project's expected useful life, and the resilience of design features, construction materials, operational processes, and decommissioning processes.
c. Purpose and need for project: Whether climate change may influence the need for the proposed project or the ability of the project to fulfill its intended purpose.
d. Affected environment and resources: Whether climate change may increase the vulnerability of the affected environment and any natural and human resources that are impacted by the project.
e. Implications for the environmental consequences of the project: Whether the impacts of climate change may exacerbate the environmental consequences of the project or generate new consequences which would not have otherwise occurred."[43]

50. The report also states that, "*(d)ue to the uncertainty of the pace and magnitude of climate change, agencies should take a precautionary approach when assessing and disclosing the potential impacts of climate change: they should evaluate impacts by using multiple scenarios, including the most severe climate change projections developed by the IPCC and other authoritative bodies. The probabilities of each of the scenarios should be disclosed if they can be estimated*."[44]

51. We and our client recommend that the above protocol and recommendations by the Sabin Center for Climate Change Law be given adequate consideration for purposes of determining the scope for the impact assessment to be applied. In particular, we refer to the steps identified at pages 52 to 56 of the report, and to Appendix A, which provides a list of informational resources that can be used to conduct project specific climate impact assessments.[45]

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[41] CEQ Draft Guidance (2014), page 9.
[42] The outcomes from the stakeholder workshop is contained in chapter 5 of the report (at page 42) and the Model Protocols are contained in chapter 6 of the report (at page 49) Available at https://web.law.columbia.edu/sites/default/files/microsites/climate-change/assessing_the_impacts_of_climate_change_on_the_built_environment_-_final.pdf.
[43] Ibid at page 50.
[44] Ibid at page 50.
[45] See https://web.law.columbia.edu/sites/default/files/microsites/climate-change/assessing_the_impacts_of_climate_change_on_the_built_environment_-_final.pdf.

52. Furthermore, in assessing the climate change impacts associated with the project regard must be had to the full lifetime of the project. In considering the full lifetime of the project it must be taken into account that there will be continued GHG emissions beyond South Africa's proposed peak plateau decline (PPD) trajectory in the INDC.

53. As stated above, and consistent with the approaches followed in the USA, the EU and many other jurisdictions, the assessment of climate change impacts must take on a three-pronged approach and give specific consideration to:
    53.1. the project's impact on climate change;
    53.2. climate change's impact on the project, including the impacts of climate change on the water necessary for the project; and
    53.3. how the project's impact on South Africa's environment and society will be affected further by climate change, i.e. how the proposed project would impact on South Africa's own necessary adaptations to a changed climate.

54. We elaborate further on each of these points below.

i. The Project's Impact on Climate Change

55. It is our client's recommendation that, in assessing the project's impacts on climate change, consideration be given to:
    55.1. direct emissions of the project;
    55.2. indirect or full life-cycle emissions;
    55.3. cumulative emissions; and
    55.4. the social cost of carbon.

    Direct emissions of the project
    55.5. We again submit that the direct GHG emissions of the project must be accurately and comprehensively calculated.
    55.6. We refer again to the methodologies referred to in paragraphs 40 and 41 above.

    Indirect or full life-cycle emissions
    55.7. These are the emissions that do no emanate directly from the project activities but which emanate from those activities directly associated with and necessary for the operation of the project i.e. the full lifecycle of the project. This will include the GHG emissions that will result from*, inter alia*, the necessary mining and transportation of coal required by the project throughout the project's lifespan.
    55.8. A study titled "A Guide to Lifecycle GHG Emissions from Electric Supply Technologies"[46] states that *"[f]or fossil fuel technology options, upstream GHG emission rates can be up to 25% of the direct emissions from the power plant*".[47] The life cycle assessment (LCA) would account for, among other things, energy resource exploration, extraction and processing; raw materials extraction for technology and infrastructure; transport of fuel; and waste management (e.g. ash disposal).[48]

    Cumulative emissions
    55.9. The emissions and impacts of the project must not be assessed in isolation - consideration must also be given to the cumulative impact that the project, with the impacts of other GHG emitters, will have for the existing environment, infrastructure, municipal services and communities in the area.
    55.10. The USA draft Guidance notes that diverse individual sources of emissions each make relatively small additions to global atmospheric GHG concentrations that collectively have huge impacts.[49]

[46] Available at https://www.iaea.org/OurWork/ST/NE/Pess/assets/GHG_manuscript_pre-print_versionDanielWeisser.pdf.
[47] Page 10
[48] Page 8.
[49] Page 10 of the draft Guidance

55.11. In this regard, consideration must be given to the limited "emission space" which remains for South Africa and which is needed by other sectors such as agriculture and transport. There is a limit to the amount of carbon which can still be emitted before 2°C of warming becomes inevitable.[50] The result is that there is effectively a limit to the amount of GHGs which can be emitted, and effectively the already limited "emission space" must be used cautiously for industries that need it. Industries such as agriculture, on which human beings are directly dependent for life, for example, require the emission space more urgently.

The social cost of carbon

55.12. We reiterate that the CCIA must consider the external costs associated with the project's impacts on climate change and refer again to the USA's SCC protocol (SCC)[51] for assessing climate impacts, referred to above at paragraph 43.

ii. The Impacts of Climate Change on the Project

56. The impacts associated with climate change must be considered as risks not only for the world and surrounding environment, but also as risks for the proposed project, and these must be comprehensively assessed. The associated risks may entail, for example, climate-related phenomena such as flooding, drought and heat waves, which can directly impair the performance and longevity of infrastructure and buildings such as the proposed project.

57. Under EU law, an EIA should address "*the risk of major accidents and/or disasters which are relevant to the project concerned, including those caused by climate change, in accordance with scientific knowledge*", and "*the vulnerability of the project to climate change*."[52]

58. Fiji's EIA Guidelines, 2008[53] require project applicants to consider the vulnerability of a project to natural disasters,[54] taking into account the future impacts of climate change and sea level rise.[55]

59. The EIA Guidance for Coal Fired Power Stations in Pakistan (IUCN)[56] elaborates usefully on this issue by listing the coal-fired power sector's vulnerability to projected climate changes as including the following:
    59.1. increases in water temperature, which are likely to reduce generation efficiency, especially where water availability is also affected;
    59.2. increases in air temperature, which will reduce generation efficiency and output as well as increase customers' cooling demands, stressing the capacity of generation and grid networks;
    59.3. changes in precipitation patterns and surface water discharge, as well as an increasing frequency and/or intensity of droughts, which may reduce water availability for cooling purposes to thermal power plants; and
    59.4. extreme weather events, such as stronger and/ or more frequent storms, which can reduce the supply and potentially the quality of coal, damage generation and grid infrastructure, reduce output, and affect

[50] The report presents the first broad diagnosis of misalignments between overall policy and regulatory frameworks and climate goals. It states that "*identifying and addressing these misalignments systematically in each country will enhance the responsiveness of economic and social systems to the climate change agenda*" see p24 and p27 Ibid.
[51] The protocol was developed by a working group of USA federal agencies, including the U.S. Department of Agriculture. See https://www3.epa.gov/climatechange/Downloads/EPAactivities/scc-fact-sheet.pdf.
[52] Directive 2014/52/EU (2014) para 13.
[53] Available at http://marineecologyfiji.com/marine/wp-content/uploads/2014/11/EIA-guidelines-FIji.pdf.
[54] Para 2.5, page 72.
[55] See para 2.5 at page 72. Available at http://marineecologyfiji.com/marine/wp-content/uploads/2014/11/EIA-guidelines-FIji.pdf.
[56] Coutinho, Miguel and Butt, Hamza K. 2014 Available at http://cmsdata.iucn.org/downloads/niap___coal_fired_power_plants.pdf.

security of supply. This may be of particular significance in regions where projects are located or planned in water-stressed areas or where water is scarce.[57]

60. In South Africa, an already water-scarce country, climate change is impacting, and will particularly impact upon, water supply (both quality and quantity) and water management structures for existing communities, public infrastructure, agriculture and the proposed project, should it go ahead.[58] We note that Limpopo was declared a drought disaster area in November 2015[59] and the situation in recent months has only worsened, with food security being an additional related crisis.[60]

61. The World Economic Forum's '2015 Global Risk Report' has named water crises the world's greatest risk. The world is forecast to face a 40% shortfall in water supplies in 15 years, owing to population growth, urbanisation and increased demand for food production, energy and industry. Climate change also increases water-related risks. South Africa is ranked among the world's 30 driest countries.[61]

62. We note that the project proposes to rely on the Mokolo Crocodile Water Augmentation Project (MCWAP) for the supply of its water. We point out, however, that the EIA process for MCWAP phase 2 only commenced a few weeks ago, the EIA application having been previously withdrawn due to water demands. As a result, relying on MCWAP to justify availability of water for the project would be speculative at best.

63. We point out that power stations are not immune to the impacts of drought. And drought (attributed to climate change) has significantly impacted the operation of coal-fired power plants in other countries. One example is India where the operators of the 2100 megawatt (MW) coal-fired Farakka power station in West Bengal shut down five of the six turbines due to lack of water. A few days later, the 500 MW sixth unit was shut down as well.[62] A study in the Nature Climate Change Journal notes that climate change impacts and associated changes in water resources could lead to reductions in electricity production capacity for more than 60% of the power plants worldwide from 2040-2069.[63]

64. It must also be taken into account – given that the proposed project is a large power station and infrastructure development - that climate change will impact upon South Africa's energy supply and use. Extreme temperature and weather events can affect energy production and delivery facilities, causing supply disruptions and affecting other infrastructure that depends on energy supply.

iii. How the Project's Impact on South Africa's Environment and Society will be affected further by Climate Change

65. In addition to the impacts that climate change will have on the operation and functionality of the project itself, climate change-related phenomena can increase the vulnerability of the surrounding environment (human and natural) to the environmental impacts of a project.[64]

[57] Page 84 http://cmsdata.iucn.org/downloads/niap___coal_fired_power_plants.pdf.
[58] The climate change impacts for water management will arise from, inter alia, increased temperatures (averages and extremes); increased precipitation leading to flooding and erosion; decreased precipitation; increased storm frequency and intensity; and sea level rise.
[59] http://www.citizen.co.za/854377/limpopo-declared-a-disaster-area/.
[60] http://www.iol.co.za/news/south-africa/limpopo/drought-kills-thousands-of-livestock-1967941.
[61] See http://www.engineeringnews.co.za/article/creamer-media-publishes-water-2015-a-review-of-south-africas-water-sector-research-report-2015-11-09.
[62] See http://reneweconomy.com.au/2016/drought-hits-indian-coal-plants-and-plans-31170.
[63] See http://phys.org/news/2016-01-worldwide-electricity-production-vulnerable-climate.html.
[64] See https://web.law.columbia.edu/sites/default/files/microsites/climate-change/assessing_the_impacts_of_climate_change_on_the_built_environment_-_final.pdf at page i.

66. The CCIA must consider how the project will impact upon South Africa's resilience to climate change. This entails consideration of the extent to which specific components of the affected environment, namely natural systems, human systems and key resources, are vulnerable and/or resilient to the impacts of climate change.

67. The Republic of Vanuatu recognises, in its Environmental Management and Conservation Act (EMCA), that the definition of "significant environmental impact" includes *"the degree to which the adaptation to, and mitigation of climate change is affected*."[65] The EMCA specifically identifies climate mitigation as a critical ecosystem service that may be provided by sites of national biodiversity significance and enables the Minister to make any regulations necessary to uphold Vanuatu's obligations under the UNFCCC for climate change adaptation and mitigation.[66]

68. We refer again to the USA draft Guidance, which confirms that climate change impact assessments must consider the effects of climate change on the environmental consequences of a proposed action.[67]

69. We reiterate that, as per the model protocols in the Sabin Center's report, the following are among the considerations that should be taken into account in assessing the impacts of climate change:
"*d. Affected environment and resources: Whether climate change may increase the vulnerability of the affected environment and any natural and human resources that are impacted by the project.*
e. Implications for the environmental consequences of the project: Whether the impacts of climate change may exacerbate the environmental consequences of the project or generate new consequences which would not have otherwise occurred."[68]

Task 5 – Emission Management Measures

70. The SR states that the emission management measures will be "*[b]ased on a high level review of the development's plans and global best practice, high level recommendations on how emissions can be managed, and how resources can be used with maximum efficiency throughout the lifetime of the project will be provided. Emissions management measures may include ongoing energy and emissions monitoring, and energy management plans*."

71. We here refer again to the WRI and the WBCSD Greenhouse Gas Protocol which sets a global standard on how to measure, manage, and report GHG emissions, and recommend that the standards provided for be taken into account.[69]

Additional Recommendations for the Scope of the CCIA

72. In addition to the recommendations already made in respect of the five tasks proposed in the SR, we and our client recommend that an additional task be added to provide for an assessment of the project's ability to maximise GHG reductions and contribute to climate change resilience.

73. We refer to our client's appeal submissions wherein our client submitted that every development decision must be based on its contribution to both climate change mitigation and adaptation.[70] We stand by this recommendation and submit that the assessment should consider the project's ability to, *inter alia*:
    73.1. maximise reduction in direct and indirect GHG emissions;
    73.2. maximise potential for further mitigation;

[65] Environmental Management and Conservation (Amendment) Act of 2010, Section 3 (amending Environmental Management and Conservation Act of 2002, Section 2).
[66] See http://www.lse.ac.uk/GranthamInstitute/law/the-environmental-management-and-conservation-act-no-12-as-amended-by-the-environmental-management-and-conservation-amendment-act-no-28/.
[67] Ibid at pages 21-25.
[68] Ibid at page 50.
[69] See http://www.ghgprotocol.org/.
[70] See paragraph 96 of the appeal.

73.3. optimise adaptation to impacts over the full life of the development, using best available knowledge and modelling projections of future impacts, which will become more extreme over time;
73.4. ensure that such adaptations are not misdirected 'maladaptations' which will fail and/or exacerbate impacts/increase vulnerability over time; and
73.5. contribute to restoration of ecological infrastructures to better enable ecosystem-based adaptation, namely building improved resilience in people, infrastructure and ecosystems.

74. We also recommend that specific provision be made in the SR and CCIA for the consideration and assessment of non-fossil fuel-based i.e. renewable alternatives to the project. Regulation 28(j) of the EIA Regulations, 2010 requires that a scoping report must include a description of identified potential alternatives to the proposed activity, including advantages and disadvantages that the proposed activity or alternatives may have on the environment and the community that may be affected by the activity.

75. Having considered what many of the above jurisdictions regard as best practice and in light of the Constitutional right to an environment not harmful to health and wellbeing and the right to have the environment protected for present and future generations,[71] we strongly recommend that the recommendations above for the scope of the CCIA be taken into account and that consideration be given to the reports, legislation and guidelines referred to above, in order to ensure that the SR and the CCIA meet the requirements of NEMA and the EIA Regulations, 2010.

Palaeontological Impact Assessment

76. We note the SR states that "*[b]oth the power line foundations and excavations for the power station itself could impact on local fossil resources*."

77. It is stated that "*the likely impact of the proposed development on local fossil fuel heritage is then determined on the basis of (1) the palaeontological sensitivity of the rock units concerned and (2) the nature and scale of the development itself*."

78. In terms of 38 of the National Heritage Resources Act, 1999 (NHRA) Thabametsi, cannot proceed with the project without approval from the South African Heritage Resources Agency (SAHRA). As part of the EIA process for the project, SAHRA issued both interim and final comments – addressed below. The final comments, however, were not included in Thabametsi's final EIA. As a result, I&APs did not have an opportunity to consider and comment on SAHRA's final comment. Furthermore, the palaeontological impact assessment which is referred to in SAHRA's final comment was not included in the FEIR, nor was it made available to I&APs for consideration and comment.

79. Our client notes that the concerns highlighted by the SAHRA in their interim comments of 12 May 2014 were that "*SAHRA will only be able to issue a final comment on the project once the palaeontological impact assessment is received. Please note that the geology of the area is considered of high palaeontological sensitivity, as such a desktop study is required and based on the outcome of the desktop study, a field assessment is likely*."

80. In SAHRA's final comment, after a palaeontological impact assessment had been conducted, it was stated that: "*The northern section of the three alternatives and the power station are underlain by the Clarens Formation of the Karoo Supergroup, which is of high palaeontological significance, and by the Eendragtpan Formation which is not well known from a palaeontological perspective, but could include vertebrate fossils of the transition between the Eodicynodon and the Cyanognathus Assemblage Zones. Any fossils identified in this formation would be of valuable research significance given the scarce information available on it. The central section of Alternatives 2 and 3 is underlain by the Karoo Supergroup (Swartrant Formation), which is expected to contain Glossopteris flora. The southern section of alternatives 2 and 3 is underlain by the Kransberg Subgroup of the Waterberg Group (Mogalakwena Formation) of low palaeontological significance. The final section of Alternative 3 is located within*

[71] S 24 of the Constitution.

Cenozoic Alluvium, which is normally of low palaeontological sensitivity, however, given the rarity of fossils in regoliths, if any fossil material is identified in the alluvium, it would be of high scientific significance."

81. SAHRA made the following recommendations, insofar as the palaeontological impacts of the project were concerned: "*Regular monitoring by an ECO should be undertaken for the sediments of the Karoo Supergroup and Cenozoic regoliths. If any new evidence of fossil material is identified, work must halt immediately in the area and a palaeontologist must be contacted to inspect the findings. If the newly discovered findings are of palaeontological significance, the specialist will require to apply for a permit in terms of s. 35(4) of the NHRA.*
Should any evidence of archaeological sites or remains (e.g., remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, marine shell and charcoal/ash concentrations), unmarked human burials, or other categories of heritage resources are found during the proposed activities, SAHRA APM Unit (Colette Scheermeyer 021 462 4502) must be alerted immediately, and a professional archaeologist must be contacted as soon as possible to inspect the findings."

82. Neither we, nor our client are in a position to make valuable input on the content of the palaeontological aspect of the SR, save to say that the necessary procedures in terms of NEMA and the NHRA must be complied with at all stages of the assessment process and the community members and other I&APs must be consulted and given an adequate opportunity to participate and comment on the PIAR.

83. We reserve our rights, however, to make more substantive comments on the PIAR at a later stage, when the draft report is made available for comment.

Conclusion

84. We trust that you will take into account the above recommendations in considering the scope for the CCIA and the PIAR, prior to and as you conduct the specialist studies for the assessment of the project's climate change impacts in particular.

85. We will await a copy of the final SR, as well as the draft environmental impact report for consideration and comment by our client and other I&APs.

86. Please let us know if you have any questions or require any further information.

87. Our client's rights remain fully reserved.

Yours sincerely
CENTRE FOR ENVIRONMENTAL RIGHTS

per:
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