



Sustainable Energy & Climate Change Project

P O Box 32131 • Braamfontein • 2107
Tel: +27 (0)11 339.3662; Fax: +27 (0)86 686.8434
www.earthlife.org.za



Non Profit Organisation (NPO) No. 004-159-NPO

A project of Earthlife Africa Jhb

To: Arcus Gibb

28 July 2011

Submission on the Revised Draft Environmental Impact Report ("Revised DEIR")

We act for Earthlife Africa, Johannesburg. Herewith our client's submission to the Revised Draft Environmental Impact Report ("Revised DEIR") for the proposed Nuclear-1 Power Station (NPS).

This submission will evaluate the Revised DEIR against the legal requirements for such reports. It is submitted that the Revised Draft EIR fails to place relevant considerations before the decision maker as is required by the Promotion of Administrative Justice Act No 3 of 2000 (PAJA) and violates several substantive provisions of the National Environmental Management Act No 107 of 1998 (NEMA) and the regulations passed thereunder (EIA Regulations).

1. Legal Context

▪ ▪ ▪ Promotion of Administrative Justice Act 3 of 2000:

S 6(2): "A court or tribunal has the power to judicially review an administrative action if . . .

- (b) a mandatory and material procedure or condition prescribed by an empowering provision was not complied with; . . .
- (e) the action was taken –
 - (iii) because irrelevant considerations were taken into account and relevant ones were not considered

▪ ▪ ▪ The Constitution of the Republic of South Africa Act 108 of 1996:

S 24: Everyone has the right –

- (a) to an environment that is not harmful to their health or well-being; and
- (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –
 - (i) prevent pollution and ecological degradation;
 - (ii) promote conservation; and
 - (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

S 195(1): Public administration must be governed by the democratic values and principles enshrined in the Constitution, including the following principles:

- (b) Efficient, economic and effective use of resources must be promoted.

▪ ▪ ▪ National Environmental Management Act (NEMA) and the Environmental Impact Assessment (EIA) Regulations:

Relevant provisions of these statutes will be referenced where applicable in the submission.

2. Failure to assess socio-economic impacts of the proposed project violates NEMA and the EIA Regulations, read together with PAJA 6(2)(b).

The preamble and principles laid out in section 2 of NEMA recognises that sustainable development requires the integration of social, economic and environmental factors in the planning, implementation and evaluation of decisions to ensure that development serves present and future generations. It further states that ecologically sustainable development must be secured while at the same time promoting justifiable economic and social development.

Section 23 of NEMA is more specific in that it requires the actual and potential impacts on the environment, socio-economic conditions, and cultural heritage to be taken into account in environmental management. Regulations 31(2)(d) of the EIA Regulations state that the manner in which the ... social, economic and cultural aspects of the environment may be affected by the proposed activity must be taken into account.

Added to this section 2(4)(b) of NEMA states that environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental options. Best practicable environmental option is defined in section 1 of NEMA as the option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term.

Regulation 17 of the EIA Regulations states that guidelines must be taken into account where they have relevance to the proposed activity. For this purpose guidelines for the Western Cape have been drafted that determine how economists are to be involved in the EIA process.¹ The guidelines are very clear on what should be contained in an economic report. The guidelines state that the basic function of economic specialist input is to assist in the determination of whether a project will enhance the net social welfare. This involves considering the efficiency, equity and sustainability of the project. Input from an economic specialist is especially required if there is a chance that economic impacts are likely to influence the decision of whether or not a project is desirable. The guidelines further state that macro-economic risks need to be taken into account. In fact they clearly state that where the size of the project is such that it could influence relative prices then further analysis is required to identify and assess potential risks. The guidelines go on to state that the report also needs to take into account the vulnerability of the groups impacted on. Part of the assessment should include a consideration of who benefits and who loses from the impacts associated with the project.

It is submitted that the legal context set out above mandates that the EIAR consider the economic impacts that the construction of the NPS will have on broader South Africa, rather than the focussed report detailing the economic impacts on the local communities that was submitted by the EAP. Accordingly, the previous submission by Earthlife Africa² detailed the concerns with the Draft EIAR as follows:

- a. the impact on the price of electricity of the expenditure of R120bn on a NPS and how this will affect consumers, particularly the poor;
- b. the impact on household income and the taxpayer;
- c. the economic impact of a catastrophic incident on adjacent communities;
- d. the economic impact on all phases of the NPS's life including decommissioning which could be of the same order as commissioning;
- e. an indication of the costs and benefits to assess the socio-economic impacts of the project;
- f. the economic impacts of a major or serious accident;

1

Van Zyl, H.W., de Wit, M.P. & Leiman, A. 2005. *Guideline for involving economists in EIA processes: Edition 1*. CSIR Report No ENV-S-C 2005 053 G. Republic of South Africa, Provincial Government of Western Cape, Department of Environmental Affairs & Development Planning, Cape Town. These guidelines are relevant to the extent that the NPS will be built in the Western Cape.

2

Submission by Earthlife Africa to the Director of the Department of Environmental Affairs on the Draft Environmental Impact Assessment Report. Dated 29 June 2010.

g. waste storage costs (current and cumulative).

It is also of concern that the failure to assess these impacts results in significant infringement of the environmental rights set out in both the Constitution and NEMA. In particular Earthlife is concerned that the costs involved in the construction and operation of the NPS will be passed on to electricity consumers, a vast majority of which are from disadvantaged backgrounds. It is also of concern that these costs will be intergenerational (which is particularly problematic given that future generations will not have benefitted from the generation of electricity from the NPS).³ As mentioned earlier both the Constitution and NEMA make specific mention of the right to have the environment protected for the benefit of both present and future generations and that developments be sustainable which requires that they serve present and future generations. In this regard the cumulative economic impacts have not been assessed either (which is statutorily required)⁴.

In spite of the legal framework which clearly mandates that these (macro-economic) impacts must be assessed, and in spite of the concerns being voiced by various I&APs including Earthlife, these impacts have not been considered. Not only have these concerns been ignored in the revised drafts, but they were ignored in spite of the fact that the scoping report was accepted by DEAT subject to the condition that the economic study was to address the cost implications of the proposed NPS in relation to other electricity generating activities⁵ and in spite of the fact that the Plan of Study reiterated this by including the following criteria for the economic impact analysis:

*“Impacts on poor (low income households), other households, fiscal impacts, balance of payment impacts and social impacts, cost implications of the proposed NPS in relation to other electricity generation activities as indicated in the long term mitigation strategy document”.*⁶

The economic report itself acknowledges that *the NPS is such a large capital investment (equivalent to that of six times the capital investment in Gautrain) that the economic ripple effects will go far beyond its direct boundaries.*⁷ However, the response to Earthlife’s comments shifts the responsibility of calculating the increased electricity prices to National Energy Regulator of South Africa (“NERSA”), and avoids the legislative requirement of assessing alternative forms of electricity generation by stating that it is the purpose of the Integrated Resource Plan⁸ (“IRP”) to decide on the relative contribution of various generation options to South Africa’s overall electricity mix. What this response fails to acknowledge is that neither NERSA’s electricity increase application, nor the IRP is an equivalent to assessing the economic impacts in the manner which the law suggests. Further, neither NERSA nor the IRP look at the all economic impacts that are necessary in this context and they also do not consider potential or cumulative economic impacts. It is submitted that it is a mistake to conflate these (NERSA and IRP) processes with the environmental impact assessment process and it is further submitted that doing so supports the circumvention of the requirements of NEMA.

3
NEMA s 1 (definition of “sustainable development”).

4
EIA Regulations 2010, regulation 22(i)(i).

5
Letter from DEAT to Arcus Gibb dated 19/11/2008.

6
Page 27, Plan of Study.

7
Page 40, Economic Report, Revised DEIR APP E17 Economic Report.

8
Government Gazette, No 34263, Vol 551, 6 May 2011.

In addition to the concerns canvassed in earlier submissions, it is further submitted that it is at this stage impossible for the applicant to come into compliance with the requirements of an economic report because different nuclear power plants will have different impacts on the economy. Factors that will have different impacts on the economy include:

- a. the type of reactor that is chosen,
- b. the different failings and accidents different reactors may potentially have and the corresponding mitigation measures that need to be taken,
- c. safety features that need to be included depending on the design,
- d. the fuel type and its corresponding burn up rate,
- e. fuel storage options including alternatives,
- f. waste facilities and disposal methods,
- g. number of containment hulls,
- h. whether a core catcher is necessary (they are dependent on the type of design),
- i. the emergency zones that need to be determined,
- j. the source term,
- k. possible cost overruns,
- l. labour, expertise and material required etc.

The economic impacts of the construction of a nuclear reactor would thus vary depending on the specific design and its corresponding features. In turn, the lack of a final design results in a failure to properly assess and analyse the full potential economic impacts and place sufficient relevant information before the decision maker. Further to the above, the fact that a site has not been chosen again means that it will be impossible to assess and analyse the full potential economic impacts. Site related factors that may influence the economic impacts include:

- a. potential accidents and the related economic impacts of a major accident on the local economy,
- b. which economies and what agriculture would be affected,
- c. safety features that need to be built in depending on the location,
- d. the mitigation factors that would need to be taken into account and their related costs,
- e. the proper emergency zones that would need to be placed and the economic impact this would have on communities, agriculture, local economies and the mitigation measures that would need to be placed in light of this,
- f. geology and seismicity (which would determine different structural features and hence different cost implications),
- g. different sites have different land use planning considerations – for example Cape Town (and its surrounding regions) is an expanding metropolitan area with limited suitable land for residential purposes and a housing backlog for low income and gap housing that increases annually

It is further submitted that because all potential economic impacts need to be assessed, the impacts of the cost of insurance against significant potential impacts must also be assessed and analysed in the economic report. This is especially so because the cost of insurance against such accidents may be very large and are excluded from household insurance. It is understood that the actual level of financial security and the manner in which it must be provided must be determined under the provisions of the National Nuclear Regulator Act No 47 of 1999. However, it is submitted the actual determination of the financial security is not equivalent to the assessment of its impacts as required by the EIA process and therefore the failure to assess this impact is a failure to properly comply with statutory requirements.

As a result it is submitted that relevant information that could materially influence the decision maker is not before it the decision maker and therefore a decision to authorise the construction of a nuclear power station is open to judicial review upon finalisation.⁹ Not only is it submitted that relevant information is not before the decision maker but we also submit that the economic impacts need to be assessed in order to comply with

9

Section 6(2)(e)(iii) of PAJA Act No 3 of 2000.

NEMA, and that not doing so would mean that there is a real risk of infringing the environmental rights of both present and future generations.

3. Failure to assess worst-case scenario impacts violates NEMA and the EIA Regulations, read together with PAJA 6(2)(b).

EIA Regulation 31(2)(l) states that an environmental assessment report must include “an assessment of each identified potentially significant impact, including cumulative impacts, the nature of the impact, the extent and duration of the impact, the probability of an impact occurring, the degree to which the impact can be reversed, the degree to which the impact may cause irreplaceable loss of resources, and the degree to which the impact can be mitigated.”¹⁰ “Significant impact” is defined in the Regulations as “an impact that by its magnitude, duration, intensity, or probability of occurrence may have a notable effect on one or more aspects of the environment.”¹¹ Under this definition, “significant impact” includes a catastrophic, worst-case scenario impact.

In addition, NEMA’s repeated focus on minimisation, prevention, and mitigation of environmental degradation¹² mandates an assessment of the impacts of a severe accident because such an assessment will lead to better prevention and mitigation measures. The need to carefully consider catastrophe scenarios is particularly apparent in light of the recent Fukushima nuclear disaster. The plant, operated by Tokyo Electric Power Co. (TEPCO), was protected by a seawall 5.7 meters high but unprepared for the 14 meter waves that actually hit the plant after the earthquake. TEPCO’s disaster projection scenarios for the plant had not considered the possibility of higher waves.¹³

The Revised DEIR fails to assess worst-case impacts. With regard to natural disasters, the EIR merely states the obvious, that an earthquake or flood may have a major negative impact on a nuclear power plant, rather than assessing the impacts that the nuclear power plant would have on the surrounding environment in the event of an earthquake or flood.¹⁴ The emergency response report explicitly states, “The approach of this specialist report is different to the other specialist reports, in the sense that *it has not identified and assessed impacts*.”¹⁵ With regard to health impacts, the EIR merely estimates the *probability* of accidents caused by external forces (“Category C events”) without assessing the *impacts* of such accidents, contrary to Regulation 31.

10

EIA Regulations 2010, GNR 543 GG 33306 of 18 June 2010, Chapter 3, s 31, subsec 2(l).

11

EIA Regulations 2010, GNR 543 GG 33306 of 18 June 2010, Chapter 1.

12

NEMA s 2(4)(a)(i)–(iii), (vii), s 23(2)(a)–(b), s 24(1), (4)(b)(ii), (4A).

13

TEPCO details tsunami damage: Waves that hit Fukushima plant exceeded firm's worst-case projections, Yomiuri Shimbun (Apr. 11, 2011), available at <http://www.yomiuri.co.jp/dy/national/T110410003477.htm>.

14

Revised DEIR APP E4 Seismic Risk Assessment 4.1.1(a), (f); 4.1.2(a), (f); 4.1.3(a), (f); Revised DEIR APP E16 Oceanographic Assessment at 3.1.3, 3.2.3, 3.3.3, 4.1.5, 4.2.7.

15

Revised DEIR, Chapter 9, Environmental Impact Analysis, Emergency Response, at 9.23 (emphasis added).

The response to this issue when raised at the Final Draft Environmental Impact Report stage was that severe accidents “fall firmly within the ambit of the NNR licensing process.”¹⁶ Such reliance, however, is misplaced as an NNR license cannot function as the equivalent of an environmental authorisation under NEMA 24L. NNR authorisation establishes safety standards under normal operating conditions;¹⁷ it does not meet the requirements of NEMA 24(4)(a) to measure environmental *impacts*.

It is further submitted that not only does the Revised DEIR bypass the statutory requirement to assess all identified potentially significant impacts, which includes a worst-case analysis, it is actually impossible for the applicant to assess the impacts of a catastrophe in the absence of a final design. Eskom purports to base its assessments on a generic nuclear power station design,¹⁸ using an “envelope” of data that includes the “highest possible values for various aspects for a range of different nuclear technology vendors,”¹⁹ including Generation III reactors. But different systems will have different accident consequences. In other words, a nuclear meltdown is not just a nuclear meltdown – rather, the specific effects of an accident will vary widely depending on factors such as the type of fuel used, the burnup rate of the fuel, and the safety mechanisms installed, all of which depend on the final design of the plant. Basing an assessment on “highest possible values” is not sufficient because the difference in impacts is not merely a matter of degree but also of quality and composition. Moreover, it is currently not possible to make generalisations about Generation III reactors as they are just beginning to enter the market and do not yet have a proven track record.²⁰

4. Failure to assess all potential impacts of nuclear waste violates NEMA and the EIA Regulations, read together with PAJA 6(2)(b).

EIA Regulation 31(2)(l) states that the report must include “an assessment of each identified potentially significant impact, including cumulative impacts, the nature of the impact, the extent and duration of the impact, the probability of an impact occurring, the degree to which the impact can be reversed, the degree to which the impact may cause irreplaceable loss of resources, and the degree to which the impact can be mitigated.”²¹ “Significant impact” is defined in the Regulations as “an impact that by its magnitude, duration, intensity, or

16

Revised DEIR, APP IRR 45a Long Submission ELA Final, at 16.

17

See National Nuclear Regulator Act Regulations, No. R. 388 (2006) s 3–5; National Nuclear Regulator Act 47 of 1999, ch 1 (definition of “action”).

18

Id.

19

Revised DEIR, Chapter 9, Impact Analysis, Assumptions 9.2.2.

20

See Advanced Nuclear Power Reactors, World Nuclear Association (June 2011), at <http://www.world-nuclear.org/info/inf08.html> [last accessed 28 July 2011] (discussing various types of Generation III reactors, only one of which is currently operating while others are still undergoing development, design certification, or construction).

21

EIA Regulations 2010, GNR 543 GG 33306 of 18 June 2010, Chapter 3, s 31, subsec 2(l).

probability of occurrence may have a notable effect on one or more aspects of the environment.”²² Radioactive waste is certainly a “significant impact” under a common sense reading of the definition, and it has been identified as such by numerous public participants,²³ the DEA,²⁴ and the applicant itself.²⁵

The applicant has failed to adequately assess the impacts of generating radioactive waste. First, the EIR does not assess the cumulative impacts of generating radioactive waste, in violation of EIA Regulation 31(2)(l). The impacts of the waste to be generated by Nuclear-1 must be analysed in light of the waste already generated by Koeberg Nuclear Power Station and in addition to other existing environmental stresses in the proposed sites.

Second, the EIR does not adequately analyse the nature, extent, duration, and probability of waste impacts and the degree to which they may cause irreversible damage. The EIR merely classifies each identified potential impact (such as water contamination) as “low,” “medium,” or “high,” without any explanation as to the content of those labels and how it arrived at those conclusions. Such an “impact assessment” is meaningless and results in an incomplete EIR.

Third, the EIR does not assess the economic consequences of long-term waste disposal and storage. Economic impacts are probably the most far-reaching potential impacts of waste management, as the consequences of waste extend to future generations and radioactive emissions can continue to thousands of years,²⁶ and the costs of constructing high level waste facilities are exorbitant. The proposed Yucca Mountain high level waste repository in the U.S. was estimated in 2006 to cost \$23 billion, a 342% increase over the original estimate in 1984 (accounting for inflation).²⁷ The costs of permanent high level waste disposal is an extremely significant impact of nuclear waste; failure to mention such huge-scale impacts violates EIA Regulation 31(2)’s requirement that an EIR contain all information necessary for the authority to make a decision and PAJA’s requirement that all relevant information be presented to the decisionmaker.

Fourth, and most alarmingly, the EIR has failed to identify the overheating of spent fuel rods as a potential impact of storing high level nuclear waste. The EIR proposes to store high level waste temporarily in spent fuel pools on-site.²⁸ These spent fuel pools pose grave safety risks because in the event of an accident, the rods

22

EIA Regulations 2010, GNR 543 GG 33306 of 18 June 2010, Chapter 1.

23

Revised DEIR App D8 Combined IRR Volumes Final at 157–186.

24

Letter from Ms. Joanne Yawitch, Deputy Director General of Environmental Quality and Protection, DEA, to Mr. Tim Liversage, Arcus Gibb (Nov. 19, 2008) (laying out conditions under which the scoping report was to be accepted, which included assessment of nuclear waste).

25

Revised DEIR, Chapter 9, Impact Analysis 9.29 and APP E29.

26

See Revised DEIR, APP E29 Waste Assessment 5.2.2;

27

See Marvin Resnikoff et. al., *The Hazards of Generation III Reactor Fuel Wastes: Implications for Transportation and Long Term Management of Canada’s Used Nuclear Fuel*, GREENPEACE CANADA 35 (May 2010), available at http://www.greenpeace.org/canada/Global/canada/report/2010/5/nuclear/GP_REACTOR_FUEL_REPORT_MAY_2010.pdf.

28

Revised DEIR APP E29 Waste Assessment 5.5.2.

could overheat, releasing radioactive gases and potentially causing a meltdown.²⁹ Overcrowding in spent fuel pools also poses risks as the pools become hotter and more radioactive.³⁰ The risk of overheating pools is particularly salient and urgent in light of the Fukushima nuclear disaster, in which a spent fuel pool overheated at Reactor No. 4 after cooling systems were knocked out by the earthquake and tsunami.³¹ Indeed, the head of Areva's North American unit, Jacques Besnainou, stated, "One of the things we're discovering in Fukushima is leaving used fuel in . . . a spent fuel pool may not be a very wise decision."³² Overcrowding is also a present danger, as the spent fuel rods at Koeberg have been re-racked to extend their operating capacity.³³

The response to this issue when raised at the Final Draft Environmental Impact Report stage was, "The impacts of handling and storage of radioactive waste is a matter that is firmly within the ambit of the NNR and the newly established National Radioactive Waste Disposal Institute."³⁴ However, the EIA Regulations clearly list the "construction of facilities or infrastructure for . . . the **storage and disposal of nuclear fuels**" as an activity requiring an EIA³⁵ and thus also within the ambit of NEMA. The response goes on merely to repeat that no solution has been found for long-term storage of high level waste and that it will be stored indefinitely onsite, unresponsive to any of the issues above.

It is further submitted that just as it is impossible for the applicant to assess socio-economic and worst-case impacts in the absence of a final design,³⁶ it is also impossible to assess waste impacts in the absence of one. The impacts of radioactive waste will vary depending on the composition of the waste, which depends on the type of fuel used and burnup rate, which in turn depend on the reactor design. The cursory categorisation of

29

See Union of Concerned Scientists, Nuclear Power, Safer Storage of Spent Nuclear Fuel, at http://www.ucsusa.org/nuclear_power/nuclear_power_risk/safety/safer-storage-of-spent-fuel.html (last accessed 8 July 2011).

30

Robert Alvarez, *Spent Nuclear Fuel Pools in the U.S: Reducing the Deadly Risks of Storage*, Institute for Policy Studies (May 2011), available at http://www.ips-dc.org/reports/spent_nuclear_fuel_pools_in_the_us_reducing_the_deadly_risks_of_storage [last accessed 21 July 2011].

31

E.g., Hiroko Tabuchi et al, "Spent Fuel Hampers Efforts at Japanese Nuclear Plant," N.Y. Times (March 23, 2011) at A14.

32

Update 2 –Areva Sees U.S. Nuclear Waste Recycling Planning by '15, REUTERS AFRICA (June 6, 2011).

33

Nuclear Waste, NECSA, at <http://www.necsa.co.za/Necsa/Nuclear-Technology/Nuclear-Waste-442.aspx> [last accessed 21 July 2011].

34

Revised DEIR, APP IRR 45a Long Submission ELA Final, at 8.

35

EIA Regulations 2010, GNR 543 GG 33306 of 18 June 2010, Listing Notice 2, Appendix 1.

36

See discussion *supra* p. 4.

potential waste impacts (such as contamination of water) as “low,” “medium,” or “high,” without any explanation as to how it may affect the environment, public health, and agriculture, is unlawful but also unsurprising given that the composition of the waste is unknown.

5. Failure to adequately assess project alternatives and a no-go option violates NEMA and the EIA Regulations, read together with PAJA 6(2)(b), and places false information in front of the decisionmaker in violation of PAJA 6(2)(e)(iii).

Regulation 31 of the EIA Regulations requires an assessment and comparison of potential alternatives to the proposed activity.³⁷ “Alternatives” is defined in the Regulations as “different means of meeting the general purpose and requirements of the activity, which may include alternatives to . . . the type of activity to be undertaken . . . and the option of not implementing the activity.”³⁸ NEMA s 24 also requires every application for an environmental authorisation to include an investigation of alternatives to the activity, including the option of not implementing the activity.³⁹ The duty of the applicant is to submit “all information necessary for the competent authority to consider the application and reach a decision,”⁴⁰ and the duty of the decisionmaker is to then choose the “best practicable environmental option,”⁴¹ the one that “provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term.”⁴²

Guidelines from the U.S. Nuclear Regulatory Commission (NRC) prove helpful in interpreting what it means to assess alternatives and the option of not implementing the activity (no-go option). NRC guidance calls for investigating alternatives to meet the energy demand that do not require building new capacity, such as purchasing from another utility or initiating energy conservation measures that would avoid the need for the plant.⁴³ It also calls for consideration of several other energy sources, including wind, geothermal, hydropower, and solar, even if they are considered non-competitive options.⁴⁴

37

EIA Regulations 2010, GNR 543 GG 33306 of 18 June 2010, Chapter 3, s 31, subsec 2(g), (i).

38

EIA Regulations 2010, GNR 543 GG 33306 of 18 June 2010, Chapter 1, s 1, subsec 1.

39

NEMA s 24(4)(b)(i).

40

EIA Regulations 2010, GNR 543 GG 33306 of 18 June 2010, Chapter 3, s 31, subsec 2.

41

NEMA s 2(4)(b).

42

NEMA s 1 (definition of “best practicable environmental option”).

43

See Environmental Protection Agency, Office of Enforcement and Compliance, EPA Publication 315-X-08-001, § 309 Reviewers Guidance for New Nuclear Power Plant Environmental Impact Statements (Sept. 2008) at 14.1.1, 14.1.2, available at <http://epa.gov/compliance/resources/policies/nepa/309-reviewers-guidance-for-new-nuclear-power-plant-EISs-pg.pdf> (last accessed 18 June 2011).

44

Id.

The Revised DEIR has not adequately assessed project alternatives and the no-go option. The EIR simply lists some energy sources in a table,⁴⁵ without any analysis of their impacts or the significance of those impacts, and cites the lack of base load capacity as justification for not evaluating other energy sources. Missing from Eskom's analysis is an investigation of ways to meet energy demand without generating new capacity or ways to generate the shortfall from other sources. Missing is a true comparison of the various alternatives. With regard to the no-go option, the EIR simply states that the no-go alternative is not a feasible or realistic alternative,⁴⁶ despite the fact that the government included a no-nuclear scenario in the IRP2 that is cost-effective and provides security of supply.⁴⁷

These conclusory assertions about project alternatives and the no-go option not only violate substantive requirements to assess them under NEMA and the EIA Regulations but are also inaccurate. The finalised Integrated Resource Plan (IRP2) included no-nuclear scenarios that are cost-effective and provide security of supply.⁴⁸ Thus, the IRP2 shows that base load is not an issue in pursuing a nuclear-free energy plan. In addition, the IRP2 stated that after taking into account the fact that new energy technology costs would decrease over time and that nuclear would be 40% more expensive than originally projected, the cost-optimal output from the model did not include nuclear at all.⁴⁹ Thus, not only is a no-nuclear scenario feasible and secure, it is actually the most cost-effective option.

The applicant has not only failed to assess project alternatives and a no-go option, but has inaccurately concluded that alternatives and a no-go option are simply not viable. In addition to violating substantive provisions of NEMA and the EIA Regulations, the applicant here has put irrelevant information in front of the decisionmaker in violation of PAJA 6(2)(e)(iii), and any decision taken on the basis of such information will be unlawful.

Further, Eskom has usurped the role of the decisionmaker, deciding for itself which option is best and that the no-go option is not a viable one. Removing options from consideration also precludes the decisionmaker from choosing the best practicable environmental option as required by NEMA.

When this issue was raised at the Final Draft Environmental Impact Report stage, applicant asserted that the IRP2, which chose to commit to 9600MW of nuclear, obviates any need to investigate alternative forms of power generation and the no-go option in the EIR because it has already established the optimal energy mix.⁵⁰ However, such rigid adherence to policy in making an administrative decision fetters the decisionmaker's

45

Revised DEIR, Chapter 5, Project Alternatives, 5.3.1 Nuclear Generation Alternatives.

46

Revised DEIR, Chapter 9, Impact Analysis, 9.33.12.

47

Integrated Resource Plan for Electricity 2010–2030, GNR 400 GG 34263 of 6 May 2011, at 38–45.

48

Integrated Resource Plan for Electricity 2010–2030, GNR 400 GG 34263 of 6 May 2011, at p. 18, 6.9.1, 6.9.4 (“If new renewable generation capacities should fail to reach their forecast performance in terms of full-load hours, this will increase total costs. It will, however, not affect other dimensions like security of supply, since solar PV is completely backed up with conventional, dispatchable generation and wind power is backed up to a large extent.”); *id.* at p. 39, B.30.

49

See Integrated Resource Plan for Electricity 2010–2030, GNR 400 GG 34263 of 6 May 2011, at 38–39, paras. B.23, B.25, B.27, B.30.

50

Revised DEIR, APP IRR 45a Long Submission ELA Final, at 19–20.

discretion in violation of PAJA. While policies in keeping with the empowering legislation may be used to assist decisionmaking, they may not inevitably determine the outcome of the decision, lest they “preclude the person exercising the discretion from bringing his mind to bear in a real sense on the particular circumstances of each and every individual case coming up for decision.”⁵¹

The IRP2 includes feasible no-nuclear scenarios⁵² that are cost effective and provide security of supply, showing that the decision to pursue nuclear energy is not an inevitability but a policy decision. The applicant, however, falsely asserts that the no-go option is not viable and attempts to hide behind policy (the IRP2) to bypass the statutory requirements of NEMA.

6. General failure to place relevant considerations in front of the decisionmaker violates PAJA 6(2)(e)(iii).

Failures to assess socio-economic impacts, worst-case scenario impacts, waste impacts, a no-go option, and project alternatives, in addition to violating substantive provisions of NEMA and the EIA Regulations, also amount to withholding relevant information away from the decisionmaker in violation of PAJA 6(2)(e)(iii).

Because of NEMA’s repeated emphasis on the integrated nature of environmental management, the socio-economic impacts of the NPS (most notably the impact on electricity prices and the economic fallout from a disaster) is relevant information that must be brought before a decisionmaker. Because NEMA places such a high premium on minimisation of impacts and investigation of mitigation, a worst-case scenario analysis is also clearly relevant information, as it will bring to light the full extent of potential impacts and all possible safety measures.⁵³ Because of NEMA’s life cycle and intergenerational provisions, waste impacts are also relevant. Assessment of project alternatives and a no-go option are relevant because NEMA and the EIA Regulations have specified them as such.⁵⁴ Any approval made without such information will be one in which relevant factors were not considered.

7. Approving the NPS in the absence of a long-term solution to the problem of high level nuclear waste is unlawful.

This EIR acknowledges that no long term solution currently exists for the disposal of high level nuclear waste.⁵⁵ Storage of high level waste in spent fuel pools, which the applicant proposes to do, is only an interim solution⁵⁶ and one whose safety has been questioned in the aftermath of the Fukushima disaster. The Waste Assessment makes no projection of the costs of this interim storage or any mention of research and development that will be invested in finding a solution.

51

Richardson v Administrator, Transvaal 1957 (1) SA 521 (T) at 530.

52

Integrated Resource Plan for Electricity 2010–2030, GNR 400 GG 34263 of 6 May 2011, at 38–45.

53

See supra Section (b)(ii) at p. 13–15 & n. 30.

54

NEMA s 24(b)(ii); EIA Regulation 31(g), 1 (definition of “alternatives”).

55

Revised DEIR, Chapter 9, Impact Analysis, 9.29.6; Revised DEIR APP E29 Waste Assessment, 2.2.10.

56

National Radioactive Waste Management Policy and Strategy (2005) at 13.1.

Approving such a project will violate NEMA's life cycle⁵⁷ and intergenerational provisions.⁵⁸ Without knowing the project's full life cycle consequences or the costs of long-term waste storage, the decisionmaker will be unable to determine whether the applicant is able to bear responsibility for the project throughout its life cycle (because it is unknown) and whether the project will pose an undue burden on future generations.

Approval will also violate international standards, which state that no "undue burden" be placed on future generations⁵⁹ and every country should have a national policy and strategy in place for the management of radioactive waste.⁶⁰ While the Revised DEIR refers to the National Radioactive Management Policy and Strategy of 2005 and the National Radioactive Waste Disposal Institute Act of 2008, such policies do not meet international best practice as they do not identify the ultimate disposal end point for high level waste.⁶¹ The National Radioactive Management Policy and Strategy does not identify an ultimate disposal end point, merely stating that "Government shall ensure that investigations are conducted within set timeframes to consider the various options for safe management of used fuel and high level radioactive wastes in South Africa."⁶² The National Radioactive Waste Disposal Institute Act also does not provide a long-term solution; its purpose is limited to establishing an agency to manage radioactive waste,⁶³ which the Revised DEIR acknowledges has not yet been formally constituted.⁶⁴

8. Approving the NPS in the absence of a final project design is unlawful.

Eskom has chosen to conduct an EIA before settling on a plant type and admits that "detailed descriptions of the proposed plant are not available."⁶⁵ Thus, it has decided to assess a generic nuclear power station design for

57

NEMA s 2(4)(e).

58

NEMA s 1 (definition of "sustainable development").

59

International Atomic Energy Agency, *Policies and Strategies for Radioactive Waste Management*, Chapter 4, Principles for Establishing a Policy and Strategy, at 8 (2009).

60

International Atomic Energy Agency, *Policies and Strategies for Radioactive Waste Management*, Chapter 1, Introduction, at 3 (2009).

61

International Atomic Energy Agency, *Policies and Strategies for Radioactive Waste Management*, Chapter 11, Strategy Formulation and Implementation, at 41 (2009) ("If long term storage is considered within the strategy, the ultimate intended disposal end point should nevertheless be indicated.").

62

Radioactive Waste Management Policy and Strategy for the Republic of South Africa, Department of Minerals and Energy, at 13.1 (2005).

63

National Radioactive Waste Disposal Institute Act 53 of 2008.

64

Revised DEIR, Chapter 9, Impact Analysis, 9.29.6.

65

Revised DEIR, Chapter 3, Project Description 3.5.

the EIA process,⁶⁶ using an “envelope” of data that includes the “highest possible values for various aspects for a range of different nuclear technology vendors,”⁶⁷ including Generation III reactors.

While the EIA regulations do not explicitly require a project design as part of the application,⁶⁸ one is necessary in order to meaningfully fulfill its requirements. Without one, it is impossible to specifically and accurately assess the impacts the development will have on the surrounding environment. Absence of a final design precludes a proper impact assessment of not only socio-economic, worst-case, and waste impacts but of all impacts. Mitigation and safety measures, in turn, are also vague and based on inadequate information. Further, a meaningful choice cannot be made between the three proposed sites on the basis of such scanty information.

The pointlessness of conducting an EIA without first deciding on a project design is evident from the superficial treatment given to potential impacts and mitigation measures throughout the Revised DEIR.⁶⁹ Even where proposed measures are more detailed, such as the emergency planning zones (EPZs),⁷⁰ without a final design it is unclear how such measures were determined and whether they are justifiable. An EIR of such scanty analysis amounts to a failure to assess impacts and investigate mitigation measures as required by the EIA Regulations and NEMA.

In addition, such an inadequate EIR will constitute a grand failure to place relevant factors in front of the decisionmaker. If the regulator does not get specific, meaningful analysis on the potential impacts of the NPS in each proposed site, he or she will be unable to choose the right site or proper levels of mitigation. Any authorisation based on this EIR will be an unlawful one, as none of the factors identified as relevant under NEMA and the EIA Regulations have been properly assessed. Insofar as the lack of a project design precludes adequate assessment of impacts and mitigation measures, conducting an EIA before choosing a design is premature.

66

Id.

67

Revised DEIR, Chapter 9, Impact Analysis, Assumptions 9.2.2.

68

Compare UK regulations, which require environmental statements to contain “a description of the development comprising information on the site, **design**, and size of the development.” Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999, Regulation 2(1) (definition of “environmental statement”) & Schedule 4, Part II (1) (emphasis added).

69

See, e.g., Revised DEIR, Chapter 9, Impact Analysis, Impacts on Flora and Ecosystem Functioning, Duynefontein, 9.10.1(a) (“the primary dunes **may** be impacted, **depending on what coastal setback is created**”) (emphasis added); Revised DEIR, APP E29, Waste Assessment, 8.2, 8.3, 8.4, Table 8-1 (superficial assessment of the impacts of radioactive waste, without any explanation as to how it came to its conclusions); Revised DEIR, Chapter 9, Impact Analysis, Impacts of Nuclear and non-nuclear waste, Mitigation 9.29.7 (“high level waste management system must be designed to safely manage and hold all high level waste and spent fuel”); Revised DEIR, Chapter 9, Impact Analysis, Impacts on Terrestrial Vertebrate Fauna, Mitigation, 9.13.5 (“reduce number of roads and tracks and place them carefully”).

70

Eskom has proposed emergency planning zones of 800m and 3km, based on little more than an assertion that Generation III nuclear reactors possess enhanced safety features despite the fact that they are just beginning to enter the market and do not yet have a proven track record. See Revised DEIR Chapter 9, Impact Analysis, Limitations 9.2.1 & Emergency Response 9.23.

9. The Thyspunt site is not a viable one for the Nuclear-1 project.

The Revised DEIR identifies Thyspunt as the preferred site for Nuclear-1,⁷¹ despite the fact that the Heritage Impact Assessment concluded that Thyspunt has exceptional archaeological, palaeontological, and wilderness value⁷² and presents excessive difficulties for mitigation⁷³ and that the South African Heritage Resource Agency has unconditionally recommended that Thyspunt is not a suitable site for development.⁷⁴ Dr. Binnerman, an archaeological expert states that, “The archaeology of the coastal zone (5 km inland from the coast) is well-known and has been investigated in some detail by the author in the past. Heritage practitioners also conducted surveys along the adjacent coast for the proposed Eskom Nuclear Power Station at Thyspunt. These studies indicate that the coastal zone from the Klasies River in the west to the Krom River in the east is one of the richest and most important archaeological cultural landscapes in South Africa.”⁷⁵

The Heritage Assessment repeatedly emphasizes the impossibility of constructing Nuclear-1 without extensive, irreversible impacts on heritage at Thyspunt.⁷⁶ Yet the EIA largely ignores this, recommending that Thyspunt be the preferred site. Despite the Heritage Assessment’s unequivocal warnings that mitigation at Thyspunt is highly infeasible,⁷⁷ the Revised DEIR has included a “Heritage Mitigation Study” proposing a trial excavation in the Thyspunt site. The Heritage Assessment states that the archaeological preference is to preserve conservation *in-situ*, yet the EIA suggests a parallel system of construction of the nuclear station and excavation instead.⁷⁸

As the project stands currently, it may not go forward before Eskom has carried out its own proposed trial excavation to explore unknown aspects of the Thyspunt site to determine if there is an area where the development footprint will result in fewer impacts. However, the suitability of Thyspunt as a site for Nuclear-1 will not change whether something is found in the trial excavation or not because the value of Thyspunt lies in both its cultural heritage and high biodiversity – even if the NPS is built in an area of relatively fewer archaeological sites, it will still destroy the landscape and wilderness qualities of the area.⁷⁹ Further, cultural heritage as

71

Revised DEIR, Executive Summary.

72

Revised DEIR, APP E20, Heritage Impact Assessment 4.3.

73

Revised DEIR, APP E20, Heritage Impact Assessment 4.3; 5.1.3; 5.2.2 (c).

74

Revised DEIR, APP E20, Heritage Mitigation Study, Introduction 1.

75

Dr. Johan Binnerman, An Archaeological Desktop Study for the Construction of the Proposed Tsitsikamma Community Wind Energy Facility, Kouga Local Municipality, Humansdorp District, Eastern Cape Province (March 2011).

76

Revised DEIR, APP E20, Heritage Impact Assessment 3.1.1; 3.2.9; 3.2.10; 5.1.3.

77

Revised DEIR, APP E20, Heritage Impact Assessment 4.3; 5.1.3; 5.2.2 (c).

78

Revised DEIR, APP E20, Heritage Impact Assessment 5.1.2; Heritage Mitigation Study 1.1.1.

79

understood under the NHRA is not limited to artifacts and other physical vestiges of human society; rather, it is a holistic concept, encompassing all the relationships that existed within a certain geographical area.⁸⁰ As the HIA states, "The landscape, together with the archaeological sites it contains may be viewed as a single holistic entity, which retains the spatial patterning of human use of the landscape in a largely intact natural coastal environment that has not changed significantly since prehistoric times."⁸¹ Thus, any approval of the project will be an unlawful administrative decision in violation of the National Heritage Resources Act s 5, NEMA s 2(4)(a)(iii) and PAJA s 6(2)(e)(iii) & (h).

A project approval at Thyspunt would also violate international law. Given that the Thyspunt site qualifies as a "cultural landscape" under the UNESCO World Heritage Convention, the state now has an obligation, under Article 4 of the treaty, to ensure "the identification, protection, conservation, presentation and transmission to future generations of the cultural and natural heritage referred to in Articles 1 and 2 . . . to the utmost of its own resources and, where appropriate, with any international assistance and co-operation, in particular, financial, artistic, scientific and technical, which it may be able to obtain." Article 5 also require each State party to "take the appropriate legal, scientific, technical, administrative and financial measures necessary for the identification, protection, conservation, presentation and rehabilitation of this heritage."

In addition to violating several statutes, pursuing the Thyspunt site also presents practical difficulties. The rich palaeontological and archaeological record at Thyspunt would require a large-scale scientific dig over the period of decades, far longer than during the proposed construction of the nuclear power station. A similar scope would be Klassies Rivers Mouth, which has been under continuous archaeological examination since 1960.⁸²

See Revised DEIR, APP 20, Heritage Impact Assessment 3.2.9, 3.2.10.

80

See National Heritage Resources Act s 1 (definition of "living heritage"), s 3(2).

81

Revised DEIR, APP 20, Heritage Impact Assessment 2.3.2(c).

82

See Archaeology Case Studies, Klasies River Caves, Association of Southern African Professional Archaeologists, at http://www.asapa.org.za/index.php/archaeology/case_studies/about_archaeology_klasies_river_caves/ [last accessed 27 July 2011].