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Attention: Mr. Green

Johannesburg

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Dear Sir

ESKOM ENVIRONMENTAL IMPACT ASSESSMENT (EIA:12/12/20/944) FOR A PROPOSED NUCLEAR POWER STATION AND ASSOCIATED INFRASTRUCTURE: COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

Your correspondence to Ms. Bongzi Shinga of ACER (Africa) entitled "Comments Regarding Siting of the Proposed Nuclear Station at Thyspunt" refers.

Arcus GIBB (GIBB) acknowledges receipt of the above-mentioned letter. We thank you for your valuable comments and your participation in the Eskom Nuclear Power Station Environmental Impact Assessment (EIA) process to date. Your questions and comments concerning the Nuclear-1 have been noted.

Responses to your comments / questions are as follows:

Your comment (1)

There is so much confusion regarding the proposed nuclear station at Thyspunt that it is most perturbing and I feel obliged to comment on behalf of SCOSS.

It is agreed that with the overall findings, specifically the need to increase generation capacity, to locate new generation closest to load centres, effectively reducing system losses currently associated with long transmission distance from the generation sources to major load centres.

It is also agreed that based on the information provided, that between the four options namely Thyspunt, Bantamsklip, Koeberg, and Duynefontein it appears that Thyspunt and Koeberg are the most logical first choices for Nuclear 1.

Response (1)

Your comment is noted. For clarification Dynefontein is the site adjacent to Koeberg.

Your comment (2)

COST.

However, based on the information provided, the cost per km is as follows:

400kV line length for Thyspunt is stated as 500km at R5,3bn = R10,6 million per km

400kV line length for Koeberg is stated as 190km at R5.1bn = R26, 8 million per km

It is also recognized that lines are not identical, however please detail how two (400kV) lines could vary by over 2,5 times in cost. Also based on the above, it would seem that the shorter line, namely, Koeberg is the better first option Using Koeberg cost per km for Thyspunt, would make Thyspunt R13,4bn or using Thyspunt cost for Koeberg would make Koeberg R2bn, either way Koeberg is the most cost effective choice. It would seem that other alternatives should also be considered. What about Duynefontein close to Koeberg?

Based on the forecast increase load growth directly in the Port Elizabeth and Coega industrial area, it would suggest that substantial reduced transmission distance and cost will be achieved by locating most E Cape generation (planned future CCGT) including Nuclear 1 closest to the major load centre.

Response (2)

The costs between two sites cannot be simply divided to get a cost per km of transmission line as there are other servitude specific requirements that are included in the estimates However one of the main reasons for the difference in costs between Koeberg and Thyspunt is due to the assumption of using underground 400kV cable in the Koeberg integration in order to route the transmission circuits out of the immediate area before moving them up to overhead lines. As can be seen underground cable has a significant impact on the cost, however the actual line routes may allow us to reduce or even eliminate the use of underground cable thereby reducing the cost for Koeberg. A point of clarification here is that the reference to the Koeberg site is actually referring to the Duynefontein site, effectively adjacent to the existing Koeberg Nuclear Power Station. This was referred to as the Koeberg site within Eskom during the early stages of the studies, but is now referred to as the Duynefontein site in all correspondence and documentation.

This does not mean that Duynefontein (Koeberg) site is the most cost effective choice. Most of the Nuclear-1 power generated at this site will in effect go straight into the 765kV main transmission system to travel north to our Gamma substation before being sent back down to the south-east to the Port Elizabeth load centre area. This is what is meant at the transmission voltage level by moving the generation closer to the load centres, in this case locating Nuclear-1 at Thyspunt is significantly closer than the Duynefontein site. However at transmission voltage levels that location of Thyspunt is relatively close to Port Elizabeth load centre and in fact the integration 400kV lines form part of the transmission development to support the westward expansion of Port Elizabeth. Locating at Thyspunt also has significant quality of supply advantages for the Eastern Cape as this will improve with a large power station injecting into the system here which will also contribute to improving the stability of the Eskom network as a whole..

Your comment (3)

It is also noted that the evaluation of the sites suggested that Thyspunt is a "Medium" EIA and servitude – making it the most favourable site selection?

FACT: Thyspunt is located in the heart of a world famous fynbos area and one would require evidence and details of the EIA to support the suggestion that Thyspunt is only a "Medium" EIA.

Response (3)

GIBB is unsure as to what is being referred to as a "Medium" EIA and servitude.

The Botany Assessment attached as Appendix E11 to the Draft EIR recognises that Thyspunt has by far the greatest diversity of vegetation communities. This includes extensive and highly sensitive wetlands, particularly the Langefontein wetland complex in the eastern portion of the

site. Thus, of the three alternative sites, Thyspunt will experience potentially the highest level of impact (i.e. is least preferred), followed by Duynefontein (intermediate) and Bantamsklip (most preferred). Mitigation measures proposed by the specialist, such as search and rescue and relocation of rare plant species, rehabilitation of disturbed areas, invasive alien plant control, construction techniques etc. are recommended to reduce the significance of identified potential impacts.

Your comment (4)

It is noted that the initial EIA process was started almost 30 years ago: "The consideration of alternative locations for the proposed Nuclear-1 power station was derived from the findings of the Nuclear Site Investigation Programme (NSIP) study undertaken by independent consultants during the 1980s and the Scoping Phase of this EIA process"

Response (4)

Eskom's Nuclear Site Investigation Programme (NSIP) in the mid-1980s investigated the technical feasibility of sites along the South African coastline for the construction of a nuclear power station. Five alternative sites, namely Thyspunt (Eastern Cape), Bantamsklip and Duynefontein (Western Cape), Brazil and Schulpfontein (Northern Cape) were taken forward from the NSIP as alternative sites for the EIA for the proposed Nuclear-1. All these alternative sites were found to be technically feasible for the construction, operation and decommissioning of a conventional nuclear power station by the appointed specialists at the start of the Scoping Phase of the EIA. However, because of the difficulty to integrate with the transmission system (amongst other reasons) the Northern Cape sites were removed from further consideration at the end of the Scoping Phase of this EIA.

Your comment (5)

COMPARISON OF THE THREE CAPE SITES.

Key assumptions and considerations for this study.

The following **key assumptions** were used:

- The 2009-2018 TDP was used as reference
- Nuclear 1 phase focuses on Thyspunt, Bantamsklip and Koeberg
- Approved and planned transmission projects on the main Cape corridor will be in place by 2015 (See Appendix A)
- Major step-loads in Port Elizabeth (Smelter, IDZ, etc) will have materialized by 2017
- No EIA fatal-flaws exist on any of the sites and associated corridors
- No major "step-load" increases in the Western Cape. Load growth based on "natural growth".

The following **key considerations** were used in the assessment:

- A view to attain a long-term energy balance for each region
- Integration/corridor requirements (Infrastructure, EIA and Land Acquisition, Cost, implementation time-frames)
- Technical performance based on Steady State and Transient stability studies
- Consideration of future generation prospects (e.g. OCGT conversion, Renewable Generation Sources, etc)
- Quality of supply and Network Islanding impacts.

The forecast for the Western Grid is based on the assumption of constant growth of the existing load plus some development in certain areas. Growth in this region is 3% per year. Growth for the Southern Grid, however is based on the knowledge of the possible developments. Major step load increases are expected mainly within the Port Elizabeth area and the Southern grid is expected to grow by an average 12% per year overall over the next 10-20 years.

Response (5)

Your comment is noted.

Your comment (6)

EXTRACT from DEIR CH 5

Location of the NPS

The consideration of alternative locations for the Nuclear 1 power station was derived from the findings of the Nuclear Site Investigation Programme (NSIP) study undertaken by independent consultants during the 1980s and the findings of the Scoping Phase of this EIA process. Details pertaining to the above-mentioned studies are briefly discussed below. This section also outlines the response of the Dept. of Environmental Affairs to the recommendations made in the Scoping Report. Thereafter, the sites considered as feasible and reasonable alternative locations for the proposed power station are discussed further.

THYSPUNT.

Thyspunt is situated in the Eastern Cape on the coast between the towns of Oyster Bay in the West and St Francis Bay in the East. The site for the proposed Nuclear 1 NPS is currently vacant. There are a number of houses on the adjacent properties but these are far outside the emergency planning zone (EPZ) of 800m from the NPS. To the North of the sand-dunes, which span the northern portion of the site, the dominant land use is dairy farming.

The Thyspunt site will provide a completely new generation pool for the Eskom transmission system to supply both the Eastern Cape loads as well export excess power to the rest of the network. Besides the advantages of diversity of generation, the Thyspunt site will link up to the new transmission lines infrastructure, as well as provide a voltage controllable busbar in the Eastern Cape, which is of significant value to the operation of this network and the transmission system as a whole.

Response (6)

Your comment is noted.

Your comment (7)

Another ridiculous point is the fact that the intention is to use R330 road as the route to Thyspunt. This is the only road from Cape St Francis and St Francis Bay to Humansdorp and was not built to take 900 trucks a day. It will effectively close off the road to any other traffic with a detrimental effect for tourism and virtually cut off access to Humansdorp for the present population. In addition to the trucks, the taxi traffic will increase and accidents will happen as the 24 bus taxis and 38 taxis will be using the R330 at peak hours. The chances of accidents will be great and the heavy traffic will cause the road surface to break up fast. There is absolutely no valid reason why the direct route from Humansdorp to Oyster Bay cannot be used, it would also cause the least damage to the dune system.

Accommodation for the proposed workers would slot in very well with Kwanonzama and other settlements. The St Francis Area cannot accommodate the number of workers required for the huge undertaking as the local population still require 2000 homes and there is no land available for extra housing.

The visual and health implications of 5 sets of Eskom transmission powerlines transversing the fynbos dunes.

Response (7)

Alternative access routes to Thyspunt were identified in the Scoping Phase of the Nuclear-1 EIA process. Currently, the site can be accessed from Oyster Bay via a gravel track or from the R330 in the vicinity of Sea Vista. Two alternative access roads are provided to the site. The Eastern Access Road will be required for heavy vehicle traffic and is essential due to the relatively flat gradient along its alignment. The Northern and Western Access Routes are alternative alignments for light vehicle traffic.

The Social Impact Assessment attached as Appendix E18 to the Draft EIR also recommends the following mitigation measures in terms of transport:

- Proper planning (ITP – Integrated Transport Plan) for the internal road network to accommodate future residential development will need to be performed once the location of such development areas is known;
- Liaise closely with the appropriate municipal, provincial and other roads and transport authorities such as Taxi Associations;
- Provision of special transport services, such as bus services would be required during the construction phase; and
- Provision of parking and stop facilities for public transport services in operation during the construction phase and the type of special transport shuttle services which could be provided by Eskom for the construction workers.

The Transportation and Social Impact Assessment and access road alternatives are currently under review and a revised report will be made available for public comment as part of the Revised Draft EIR.

In terms of the visual impact of the transmission lines the impact of the construction of the transmission lines on the visual character of the area does not fall within the scope of the Environmental Impact Assessment for the Nuclear Power Station per se. The Visual Impact Assessment conducted as part of the EIA is however attached as Appendix E20 to the Draft EIR. It reports that the visibility of the Nuclear Power station at Thyspunt is contained along the coast by east-west orientated dune fields. This limits the visual exposure of the Thyspunt Nuclear Power Station to the towns of Oyster Bay and Cape St. Francis.

The main aspect that influenced the above conclusion is the presence of the visually dominant Thyspunt Nuclear Power Station and the associated transmission lines and buildings, all of which are visible to some degree from within a 10 km radius of the site, but mainly along the coastal edge. This is due to the landform that includes vegetated and moving dunes that trend east-west, almost parallel to the coastline and the extended visibility at night due to intense illumination of that site. However the general existing coastal night scene is disturbed by the intense incandescent lights on the 'chokka' boats as they fish for squid near the shore. The light intensity varies according to the season for chokka fishing. Mitigation measures in terms of this impact are described in section 4 of the report.

Lastly no health impacts related to the proposed transmission lines have been identified.

Your comment (8)

The Prevailing Winds.

The prevailing winds are Easterly and Westerly so any pollution, be it radiation or other cause, will directly affect Cape St Francis, Sea Vista, St Francis Field and St Francis Bay and that cannot be allowed to happen.

Response (8)

Your comment is noted. Section 2.2.3 of the Air Quality Report confirms that the prevailing winds at Thyspunt are Easterly and Westerly. According to the latest observations at the Thyspunt site carried out during the period 2008 to 2010 westerly winds dominate with approximately 20.5% occurrences during this period. This wind direction also experiences a high frequency of strong winds, i.e. winds in excess of 12 m/s. The second highest wind prevalence is from the west-northwest 13.7%, followed by easterly winds (11.3%).

The second highest frequency of strong winds come from the east, followed by west-southwesterly and east-northeasterly winds. The highest wind speed of 18.2 m/s occurred with a south-westerly wind, with the second highest (17.9 m/s) occurring during east-northeasterly and westerly winds.

Northerly winds have the lowest average wind speed of 3.8 m/s. These are associated with land breezes and generally of low dispersion potential.

The higher frequencies of westerly and easterly winds increase the likelihood any of the plume towards the east (Cape St Francis) and west. This is clearly also shown in the dose predictions given in Figure 3.14.

Your comment (9)

LOCATION.

This area is a Coastal Mecca attracting thousands of people per year.

It is world famous for its angling, surfing and tourism. In addition it boasts a portion of land called the Green Belt which is maintained by dedicated Non- Governmental Organizations (NGO's) for the Kouga Municipality.

The fishing fleet, making a living from Calamari and other fish species, will certainly be affected by the huge construction.

Response (9)

The Marine Biology Assessment is attached as Appendix E15 to the Draft Environmental Impact Report (EIR). The report identified the following impacts on the marine environment in terms of chokka squid:

The temporal and spatial limitations of the impacts associated with the disposal of spoil on chokka squid at Thyspunt will have limited impact on the overall squid stock, when taken within the context of the extensive area over which this species spawns.

Comment from Prof. Charles Griffiths (Marine specialist):

There are several scenarios for release of spoil (eg full or half marine disposal) and they will of course each have a different impact (depending also on current speed and direction etc at the time)

The impact of the spoil on squid is unknown but is highly unlikely to result in total loss of the stock on the general larger surrounding area. Even if spawning is reduced, there is no evidence that this will result in lower adult stock in subsequent generations (in technical terms there is no linear stock-recruit relationship). For example is 99% of eggs currently fail to reach adulthood in a future scenario half as many might be laid, but if there is now only 98% mortality (due to reduced competition) the outcome will be the same. One should be aware that the fishery itself is in the business of killing squid, which they do in the thousands of tons every year.

The Marine Specialist is currently reviewing the above and a revised report will be made available for public review and comment as part of the revised Draft EIR.

Your comment (10)

Biodiversity of this area.

Regional Assessment

The St Francis Fynbos/Thicket Mosaic is a Broad Habitat Unit (BHU). It extends from Huisklip in the West to Cape Recife in the East and is entirely associated with the calcareous sands of marine origin. This BHU falls within the Cape Floral Kingdom (CFK), one of six such plant kingdoms in the world. The CFK, comprising approximately 90 000 kms sq., is home to 9 000 plant species, 70% of which grow nowhere else in the world (i.e. they are endemic to the CFK). (Professor RM Cowling and CE Hejnis).

The CFK has long been recognized as a global priority for conservation action. Owing to its high concentration of endemic taxa, especially of plants and invertebrates, and its vulnerability to processes that threaten this unique biodiversity, the CFK has been identified as a biodiversity hotspot of global significance (Mittermeier et al. 1998). Globally, the region is also listed as a Centre of Plant Diversity (WWF and IUCN 1994), an Endemic Bird Area (Bibby et al. 1992) and a Global 200 Ecoregion (Olson and Dinerstein 1998). The area is home to 1 406 Red Data Book plant species, the highest known concentration of such species in the world (Cowling and Hilton Taylor 1994). No more loss of habitat can be permitted as this will compromise irreversibly the target achievement for this BHU.

Threats to the Flora and Fauna.

Ever expanding development.

One only has to examine the situation over the years to notice how the prime fynbos has been destroyed by development. Many wetlands are being allowed to change so that building can take place despite the insistence of EIAs.

Response (10)

Please see our response to your comment 3.

Your comment (11)

One is inclined to think that an EIA is just a way of fobbing off the public and record the fact that public participation has been carried out.

Response (11)

The principles that govern communication with society at large are best embodied in the principles of the Environmental Management Act (NEMA) (Act No. 107 of 1998, Chapter 1), South Africa's overarching environmental law. Public participation for environmental authorisation is guided by the EIA Process Regulation (GNR 385) and Guideline 4: Public Participation in support of the EIA Regulations (part of the guidelines for the implementation of Environmental Impact Assessment Regulations in terms of section 24(5) of the NEMA. Public participation is the involvement of all parties who potentially have an interest in a development or project, or may be affected by it, directly or indirectly. It is a process leading to a joint effort by stakeholders, technical specialists, the authorities and the Applicant who work together to produce better decisions than if they had acted independently.

The public participation process for this project has been extensive. Arcus Gibb and Acer have gone to great lengths to ensure that public comment is considered and included into specialist reports. Evidence of this can be seen through the comments and responses which include references to where issues are covered in the various reports and specialist studies.

Your comment (12)

Legislation.

While some legislation exists to protect South Africa's marine and coastal resources, the coastal environment is subject to a variety of legislation administered by local, provincial and national governmental authorities. Much of the legislation is not specific to the coast, but applies to the environment in general.

A few of the most important statutes regulating land and environmental protection are:-

1) The Constitution of the Republic of SA, 1996 states that "everyone one has the right to have environment protected, for the present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation and promote conservation".

2) Environmental Management Legislation. (NEMA).

NEMA gives effect to the provisions in the Constitution that relate to environmental rights and governance, and facilitates the implementation of the government's environmental management policy, as well as many other publications such as the STEP handbook, the Spatial Development Plan, Kouga Coast Sub-regional Plan, etc.

Response (12)

Your comments are noted.

Your comment (13)

Waste Management.

This aspect is of paramount importance as the Nuclear waste must be stored and moved away from this area and the best place is where it is currently located in the North West.

Response (13)

Your comment is noted. Provision is made for low and intermediate level waste at the licensed Vaalputs waste disposal site. High level waste will be stored on site indefinitely until a national repository for the waste is created. An additional waste study has been completed and is included in the Revised Draft EIR as Appendix 30.

Your comment (14)

Sand Deposits.

The beach at St Francis Bay was destroyed because the sand supply was cut off at Santareme Bay by building houses on top of the dunes. The rapid changes along the beaches of St Francis Bay give a good, however sad, example of how Nature is responding to man's interference in the landscape forming processes. The former wide beach has been considerably reduced due to the removal of sand by waves and currents and, during unfavourable incidences of tide and swell, the dunes on the upper part of the beach have been eroded so much so that some of the buildings have collapsed into the sea. The coastal waters along St Francis Bay have been "aggressive" for quite a while, removing beach sand and transporting it in a mainly eastern direction towards deeper waters at the mouth of the Kromme River. The reason why the waves and coastal currents are not carrying a balanced and optimal load is simply that not enough material is present for the water to move. Almost all dunes and sandy areas to the west and north of the shores have been covered by bush, buildings, gardens, roads, etc., and the former free movement of sand and its final deposition in the sea has ceased. The balance between input and losses has been disturbed and the negative development can be assumed to continue if no measures are taken.

Response (14)

Your comments are noted.

Your comment (15)

The International Surfing Community.

According to reliable sources the construction of the NPS will necessitate the removal of 6, 37 million m³ of sand – approximately 10 million tons – which will be pumped into the ocean. This amount of sand could completely bury the Supertubes and Seal Point reefs for years to come. This in effect will have grave consequences for the local tourist industry, which so heavily relies on the area's world famous waves that attract thousands of tourists a year to these coastal towns.

The Marine Impact Assessment states that "disruption due to discarding of spoil – this impact will negatively affect the marine environment. Acting with high intensity, the discarding of spoil will have long term affects resulting in this impact as having high consequences and high significance" and if this project is allowed to continue the construction will also threaten the continued existence of the Squid Industry in the area.

It appears that Eskom also proposes to build pipelines or tunnels 2km out to sea which will be used to supply cooling water and to disperse the hot water from the power station. The huge winter waves arriving and battering the new sandbanks at Supertubes will remove them inch by inch. The proposed site is situated on some of the highest energy coastlines in the world, which face the full power of the

high latitude anticyclones of the southern ocean which are amongst the most powerful storms on earth.

The energy from these storms makes the likelihood of securely constructing these proposed tunnels/pipelines extremely challenging, problematic and costly.

Response (15)

The impact of the disposal of spoil on the surf at Supertubes and Seal Point has been considered in Appendix C of the Oceanographic Specialist Study.

The preferred design option for the cooling water intake consists of an undersea intake connected to the shore via an undersea tunnel. The intake structure is to be placed at the end of the intake tunnel at a depth of about 25-30m below mean sea level. This will result in an overall tunnel length from the onshore access shaft of approximately 1.0km to 2.0km. The outfall will be constructed from 3 to 4 pipes 3m in diameter placed beneath the sea floor. The ends of the pipes will be raised to prevent erosion of the sea floor.

The cooling water intake and outfall structures will be designed to 'no damage' criteria using appropriate extreme conditions and conventional coastal engineering procedures and will be positioned in a depth (-25 to -35m amsl) where extreme wave conditions do not have a damaging impact (which might jeopardize the intake of cooling water) on the structure or any of its components. Detailed engineering design will be undertaken prior to the construction of the NPS.

Your comment (16)

Conclusion.

There is no justification for erecting an NPS at Thyspunt and if the authorities ignore what has been said then it will spell the deathnell of this area as it exists today.

SCOSS cannot support the erection of the NPS at Thyspunt as proposed by Eskom because of all the negative factors that have been mentioned. It is also obvious to the enlightened public that the Duynefontein option must be used.

Response (16)

Your comments are noted.

Should you have any queries with respect to the above please do not hesitate to contact Arcus GIBB.

Yours faithfully
For Arcus GIBB (Pty) Ltd



Jaana-Maria Ball
Nuclear-1 EIA Manager