

Our Ref: J27035

20 March 2011

Attention: The Overstrand Conservation Foundation

Dear Sir

Johannesburg

14 Eglin Road
Sunninghill 2191
PO Box 2700
Sunninghill 2128

Tel: +27 11 519 4600
Fax: +27 11 807 5670
Web: www.gibb.co.za

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. Bongji Shinga of ACER (Africa) refers.

Arcus GIBB acknowledges receipt of the above-mentioned letter. We thank you for your valuable comments and your participation in the Eskom Nuclear Power Station (NPS) 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 comments (1)

The Overstrand Conservation Foundation (OCF) wishes to make comment on the following aspects of the draft EIR as it affects the proposed Bantamsklip site:

- Marine impacts
- Social impacts
- Tourism impacts
- Associated transmission line route
- Site access for equipment delivery during construction

In the first three of the above, the specialist reports are inadequate and more detailed work is required. The OCF contends that both the lack of an environmentally acceptable and technically feasible cable route and site access route for delivery of large equipment to the site render the Bantamsklip site fatally flawed as an option for the construction of a nuclear power station.

MARINE IMPACT

The OCF asked Dr Barry Clark, Anchor Environmental, to review the specialist report on the marine impact. Dr Clark provided the following comments (original documents also attached for reference):

1.1 General Comments

My overall impression is that this study does not address potential impacts to the marine environment in sufficient detail given the nature of the project, and relies heavily on an EIA completed for the original Koeberg Power Station completed in 1984. The applicability of the latter study to Bantamsklip and Thyspunt, and even to Duynefontein in the present day, is dubious. The report is very vague about the extent, magnitude and timing of the impacts, which I find completely unacceptable for an assessment of this kind. It is littered with statements such as "limited area" and "temporary duration",

few of which are quantified. These terms have very different meanings to different people. Few solid recommendations are provided for mitigation of identified impacts and recommended monitoring actions are barely adequate.

Response (1)

Response from appointed Marine Ecology Specialist: As Dr Clark is well aware, studies such as these are carried out under a range of cost and time constraints and these prohibited a full-scale ecological survey of marine ecosystems surrounding each of these sites. In any event these were considered unnecessary, as the eco-regions within which each site is situated are well studied and relatively uniform, and thus can be taken to adequately represent the affected biota at the sites. The Koeberg work is the only equivalent South African study and is ongoing, representing a massive body of work over more than 20 years. It would be foolish not to consider its findings (particularly as one of the proposed sites is at the very same location!). Of course we realize the south coast sites are different and take this into account. The Koeberg experience still provided the only local model of impact though. It is worth noting that similar 'scare stories' of potential biological impacts were raised before construction at that site, but absolutely no negative impacts have in fact been detected, even in the immediate vicinity of the plant.

Your comment (2)

Specific comments

Description of the affected environment at each site is very thin and does not allow for a full evaluation of the sensitivity of the environment in question or significance of impacts to be evaluated in any detail.

Response (2)

Response from appointed Marine Ecology Specialist: The descriptions given were based on limited site visits and review of the numerous published works on the distribution patterns of the South African marine biota, plus our considerable experience concerning marine invertebrate distribution patterns. Detailed field surveys of the exact species found in each marine habitat and in each site would have required dive surveys, vessel hire, taxonomic experts to be hired, etc. This was deemed unnecessary given the good literature on this topic and that the distributions of most marine species are wide (given their broadcast spawning habits and pelagic larvae or most species). The nature and endemicity patterns of the biota of these regions are well known.

Your comment (3)

- Mention is made of the construction of a temporary dam 400 m offshore during the laying of the discharge pipes. No details are provided on how large this dam will be (and the hence size of the affected area) or exactly where it will be located at each site.
- The impacts of the dam are dismissed as being temporary. How long is temporary (days, weeks or months)?
- The report refers to the impacts of the dam being related to physical disturbance of the sediment and smothering (Duynefontein site). This may be true for this site (which is mostly sandy beach) but certainly does not hold true for the other two sites which are mostly rocky coastlines with offshore reefs. No elaboration on this point is provided for the other sites. In the case of the Bantamsklip site the impact is dismissed as follows: "the building of a temporary dam or basin will result in temporary disruption to the marine environment". How long is temporary? What habitats and communities will be affected? How much habitat will be lost?

Response (3)

Response from appointed Marine Ecology Specialist:

- No details about the dam (size, location, length of time it will be maintained for) were included, as these design details have not been decided upon.
- Duration of impact will be for the duration of construction work inside the dam, which to our knowledge is not known precisely at this stage, but which we suspect would be at least months.
- As stated on pg. 20 of the marine report, the full description of the impact is given for Duynefontein and cross-referred to in the section dealing with Bantamsklip to avoid repeating the same text for each site.

Your comment (4)

Impacts of offshore disposal of dredge spoil are reportedly minor. However maximum suspended sediment concentrations exceed the widely recognised 80 mg/l limit (or possibly even the 100 mg/l limit – this is not clear in the report) over “a very limited area.” What does this mean?

Response (4)

Response from appointed Marine Ecology Specialist: The marine report deals with the commonly used 80 mg/l limit (although it comments that in some EIAs the 100mg/l limit has been used). The report states that the limit 80 mg/l limit is predicted to be exceeded during spoil disposal and the areas that could be affected by elevated turbidity are given (for the benthic region and the water surface). The report does not consider this impact to be minor and even in the executive summary states it as ‘significant and of high consequence’.

Your comment (5)

Response from appointed Marine Ecology Specialist: Continuous low level dosing with chlorine is proposed as a means of reducing biofouling on the seawater intake pipes. The impacts of this are dismissed as being “very localised and are considered unlikely to have a significant negative impact on the receiving environment” the source of which is the previous EIA for the Koeberg Power Station. A dosing level of 2 mg/kg is cited in the introductory sections of report. Is this the same as or less than that used for the Koeberg Plant? If not this statement has no validity whatsoever. No information is provided on the toxicity of chlorine to marine biota and the breakdown rates of chlorine in the environment. The reason it is used as an antifouling agent is because it is toxic to marine organisms!

Response (5)

The dosing level to be used (2mg/kg) will be lower than that used at Koeberg Nuclear Power Station. This, combined with the fact that chlorine is not detectable at the cooling water outlet of Koeberg Nuclear Power Station means that chlorine used to maintain the free flow of water on the cooling pipes will not reach the marine environment.

Your comment (6)

The authors also use the Koeberg EIA to dismiss entrainment of fish eggs and larvae by the intake pipes as being negligible: “Entrainment is also unlikely to have a negative impact on reproduction success of fish species, as 87% of fish eggs were found to survive passage through the cooling

system". Was the viability (i.e. hatching success of the eggs in this study ever examined, or did someone just check that the eggs were still intact (i.e. not burst or discoloured)?

Response (6)

Response from appointed Marine Ecology Specialist: In the original study by Huggett and Cook the eggs were tested for viability immediately after collection using a vital stain and were not reared – indeed the authors do speculate that the live eggs may not all develop normally. In a wider context though the issue of impact is mostly one of the ratio of volume of water pumped through the station vs. the total volume occupied by the larval stock of any particular species. This ratio will be small and hence, the impact is assessed to be insignificant.

Your comment (7)

The impacts of thermal pollution are also dismissed as being minimal. However, the authors note that the plume from the Koeberg Power station was not expected to extend beyond 1 km from the discharge point. They also note that the volume of effluent from the currently proposed plants is twice as great. Does this mean that the plume may extend as far as 2 km or more from the plant? Is this really a low significance impact?

Response (7)

Response from appointed Marine Ecology Specialist: As stated in the marine report, the design of the proposed release system will differ significantly from the design used by the Koeberg Nuclear Power Station and will minimise the extent and impacts of the plume. As the warmed water will be released above the sea-bottom, at a high velocity and from multiple points potential impacts associated with the warmed water will be minimised due to mixing with cold sea water and the buoyancy of warm water. The change in design means that the plume will not simply be scaled up to 2 km. Using the required assessment criteria this impact can only be considered a 'low significance' impact. This is reaffirmed by the fact that no significant impacts due to thermal pollution have been recorded at Koeberg Nuclear Power Station.

Your comment (8)

- The assessment of impacts from the desalination plant are also particularly thin. No information is provided on the size of the plant or of the volume of effluent that it will release. Brine from the plants will reportedly be discharged directly into the surf zone which, although very turbulent, is highly retentive and allows for very limited offshore dispersal of this effluent.
- Recommendations for the proper monitoring of potential impacts of the plant are wholly inadequate. No provision is made for any water quality monitoring (temperature, salinity, oxygen). Thresholds of potential concern are not provided against which monitoring data need to be checked. For example, there should be a series of statements that list parameters that need to be monitored and thresholds that should trigger some mediatory action if these are exceeded. E.g. If temperature is elevated by more than 1°C above ambient at a distance of 1 km or more in the nearshore zone, then discharge pipe should be extended further offshore.

Response 8

Response from the Appointed Marine Specialist: As stated in the marine report brine will only be released into the surf zone during the construction phase. Oceanographic modeling has predicted that physical mixing with surrounding sea water will result in dilution to 1 g/L above ambient salinity within 110 m from the point of release. During the operational phase of this development, desalination effluent will be combined with the discharge of heated cooling water. Although the brine is expected to

have a salinity of 58 ppt (in comparison with seawater, which has a salinity of 35 ppt), this effluent will account for less than 1% of the water released. As such the hypersaline brine will be diluted to undetectable levels within the outflow pipes prior to release. While no defined standards exist for the discharge of desalination plant effluent in South Africa, the South African Water Quality Guidelines for Coastal Marine Waters states a target range of 33 ppt to 36 ppt for salinity of effluents entering the sea (Department of Water Affairs and Forestry 1995). These guidelines will be met by this development during the operational phase. Although they will not be met during the construction phase, dilution will occur within 110 m of the point of release.

The currently proposed monitoring programmes would adequately detect marine ecological changes associated with the proposed development. Monitoring of water quality falls within focus of the oceanography specialist study.

Response from the appointed Oceanography Specialist:

Brine from Desalination Plant

The dispersion of brine discharge during the construction phase of the project was considered in PRDW report, Eskom Nuclear-1 EIA Modelling of Construction Stage Brine Discharge Report No. 1010/5/001 October 2008.

The report outlines three discharge options for the brine, namely discharging the brine through a pipe located on the upper beach profile, from a pipe located in the surfzone at a depth of 5m or from a pipe located beyond the surfzone at a depth of 10m. Discharging the brine into the surfzone was considered to be the most feasible option, as the pipe located on the upper beach level would be situated above the maximum wave run up to prevent damage by wave action as well as scour, burial or blockage of by sand. Furthermore, disposal of the brine in the turbulent surfzone would also improve mixing and reduce the risk of the brine forming a density current, which will potentially transport the brine offshore along the seabed without undergoing significant additional dilution.

The model results indicated that for the range of conditions tested, the target dilution of 24 for salinity (which represents a 1 g/L increase in the ambient salinity) is met within a distance of 110 m from the discharge point, indicating a limited area of impact.

Furthermore, as the brine will be discharged only during the construction phase of the NPS (brine will be mixed with cooling water discharges during operation, and hence already diluted before it is released into the ocean) and therefore will not have an effect on the operation of the facility.

Future Monitoring

A detailed monitoring programme should be included in the Environmental Management Plan. Water quality parameters which are indicative of the general health of the marine environment should be included in the monitoring schedule. Acceptable levels of each of the parameters will be site specific depending on the sensitivity of the receiving environment.

YOUR COMMENT (9)

SOCIAL IMPACT

The negative social impact of the substantial influx of people who will be employed, and others who will move to the Bantamsklip area in the hope of becoming employed, during the construction phase is seriously understated. Serious socio-economic problems have persisted, without any solution having been found, in the Saldana Bay area following the much smaller Saldana Steel project. The social disaster caused in Saldana Bay bears testimony to the fact that similar problems will be created in the Greater Gansbaai area should the site be used for the construction of a nuclear power station. The

social impact study fails to draw lessons learned from the experience gained in the Saldana Bay area and other areas where major projects have resulted in a large influx of people into an area that is far removed from any industrial centre.

Avoiding the lingering social problems that will inevitably be created by undertaking a project of this magnitude requires simultaneous planning of sustained industrial development in the area in which the nuclear project is located, such as, for example, an equivalent to the Coega Industrial Development Zone. Only by undertaking such a long-term industrial development strategy will the socio-economic problems be mitigated. Otherwise the short-term influx of people associated with the construction phase of a nuclear power station in a rural area that is far removed from any major centre of economic activity will leave serious numbers of unemployed people with no possible source of future employment.

The Overstrand area is too environmentally sensitive to be suitable for the development of even a small-scale version of the Coega Industrial Development Zone. Mitigation of the inevitable socio-economic disaster that will follow the construction phase of a nuclear plant at Bantamsklip is therefore not possible and the **OCF considers this to be a fatal flaw** in the proposal to use this site for any future nuclear power plant.

Response (9)

The influx of substantial number of people into the area will definitely pose challenges regarding a wide variety of aspects. The importance of the mitigation measures cannot be underestimated, especially due to the fact they draw on lessons learned from other projects such as Saldana Steel.

YOUR COMMENT (10)

TOURISM IMPACT

Tourism is the only sustainable large revenue earning industry in the Overstrand. The specialist report fails to recognise the extent to which tourist contribute to the local economy and inaccurately confines the benefit to direct revenue earned by the hospitality industry. The assertion that there will be an increase in tourism to Bantamsklip through nuclear power station business related tourism is highly suspect and no reliable figures are provided that allow review of how this conclusion has been reached.

Further, the effect on the tourism industry is assumed to be restricted to the immediate Bantamsklip area. What is the basis for making this assumption when the impact is likely to be on a significant area of the Overberg? **The entire specialist treatment of the development potential for tourism lacks verifiable data and is full of assumptions and generalisations.**

Response (10)

Response from the appointed Tourism Specialist: We reject the contention that our work lacks credibility. We used whatever data existed as well as our interviews to project the existing trends so as to obtain “with” and “without Nuclear Power Station” growth rates.

The size of the tourism sector at Bantamsklip is small. An influx of 1,000 permanent residents would stimulate activities such as restaurants, public transport, schools and health facilities as well as the retail sector. As a comparison, the Medupi coal-power station at present under construction has led to the doubling of accommodation in Ellisras in the last two years and bookings have to be made at least two weeks in advance. In addition, the experience around Koeberg Nuclear Power Station in the last 30 years – the development of Melkbosstrand and the leapfrogging of up-market developments to the north of Koeberg – clearly illustrate that a Nuclear Power Station per se is not a deterrent to the growth of tourism. We have pointed out examples of Nuclear Power Stations overseas which are

themselves tourism attractions. These are not examples of bias – they are statements of fact. The area around the Bantamsklip Nuclear Power Station site is at present closed and cannot be enjoyed by tourists. If a Nuclear Power Station is built, the area would be opened to tourists (as it is at Koeberg), hence there would be an additional eco-tourism asset. That is also a statement of fact.

YOUR COMMENT (11)

ASSOCIATED TRANSMISSION LINE ROUTE

It must be noted that the EIA process for the transmission lines associated with the proposed Bantamsklip site stalled at the point where no feasible route had been identified. Both the technical and environmental difficulties associated with getting transmission lines to the Bantamsklip site are challenging and, unless definite solutions have been found, **the lack of a feasible route represents a fatal flaw**. It needs to be pointed out that the Western Cape Provincial Spatial Development Framework specifies that major transmission line routes must follow existing transport routes and not follow point to point routes across scenic landscapes. No such route is possible from the proposed Bantamsklip site and it is not possible therefore to avoid serious visual impact where transmission lines must traverse mountainous terrain of high scenic value.

Response (11)

Your comment is noted. The transmission lines are the subjects of separate EIA processes, as it would have been impractical to combine the EIA for the Nuclear Power Station and three transmission lines into a single process. Kindly submit your comments regarding the proposed Bantamsklip transmission line to through the dedicated communication channels for that particular EIA.

YOUR COMMENT (12)

SITE ACCESS FOR EQUIPMENT DELIVERY DURING CONSTRUCTION

The EIR correctly identifies serious difficulties with the modes of transport available for the delivery of major equipment to the Bantamsklip site. Sea delivery is an unacceptable solution due to the sensitivity of the coastline and to the high energy sea action along the coastline that will require extensive engineering work to allow safe docking and equipment handling.

The Overstrand Conservation Foundation considers the proposition that Bantamsklip is a suitable site for the construction of a nuclear power station as fatally flawed and recommends that Bantamsklip should be removed from the list of potential future sites.

Response (12)

Your comment is 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

A handwritten signature in black ink, appearing to read 'JMBall', written in a cursive style.

Jaana-Maria Ball
Nuclear-1 EIA Manager