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Nuclear 1 Fresh Water Supply Peer Review

Report

Version - 1

13 August 2015

GIBB (Pty) Ltd.

GCS Project Number: 13-803

Client Reference: GCS - J31314 Nuclear 1 Peer Review



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1 INTRODUCTION

GCS Water and Environment (Pty) Ltd. (GCS) was appointed by GIBB Engineering and Science (GIBB) to conduct a peer review of the Fresh Water Supply Report compiled by SRK Consulting (SRK, 2014) based on the Water Supply Assessment for the proposed Nuclear 1 Power Station project. The project is to be undertaken at Thyspunt in the Eastern Cape Province, and at Bantamsklip and Duynefontein in the Western Cape Province of South Africa.

2 SCOPE OF WORK

The scope of work for the fresh water supply peer review study is as follows:

- Assess the document/ report in terms of its fulfilment of its Terms of Reference set;
- Consider whether the report is entirely objective;
- Consider whether the report is technically, scientifically and professionally credible;
- Consider whether the method and the study approach is defensible;
- Identify whether there are any information gaps, omissions or errors;
- Consider whether the recommendations presented are sensible and present the best options;
- Consider whether there are alternative viewpoints around issues presented in the report and if these are clearly stated;
- Consider whether the style of the report is written so as to make it accessible to non-specialists, technical jargon is explained and impacts are described using comparative analogies where necessary; and
- Report on whether normal standards of professional practice and competence have been met.

3 REVIEWED DOCUMENT

The reviewed document is the Fresh Water Supply Environmental Impact Report (SRK, 2014) which is based on the Environmental Impact Assessment (EIA) study for the proposed nuclear power station and associated infrastructure, undertaken by GIBB in support of Eskom's Nuclear-1 project.

4 COMMENTS AND RECOMMENDATIONS

The underlying sub-sections highlight GCS' review of the abovementioned SRK Fresh Water Supply report, under the sub-sections as laid out in the Scope of Works.

4.1 Fulfillment of Terms of Reference

- The overall document fulfils its intended purpose.

4.2 Report Objectivity

- The report is largely objective. Areas which need attention are highlighted in the forthcoming sections.

4.3 Technical, Scientific and Professional Credibility

- **Section 2.1.2:**
 - A demand/supply analysis with volumes for the Churchill Pipeline Supply from the Churchill Dam would provide more credible conclusions as to whether this supply is being fully utilised or not, rather than totally relying on personal communication information. Personal Communication should be used as support of alternative volumetric data, as it can be difficult to justify in isolation.
 - The fact that there is 'apparently no spare capacity from Impofu Dam' should be substantiated by figures, that is, demand/supply volumes, or a credible reference, and not based on personal communication alone, for the same reasons as the aforementioned Churchill Pipeline supply from Churchill Dam.

4.4 Defensibility of Methodology and Study Approach

- **Section 2.1.1:** Details of the cited DWAF (2004) (Now Department of Water and Sanitation, DWS) document should be summarised in the Water Supply report in order to justify the conclusion that there is no availability of water reserves for power generation.
- **Section 2.1.2:** Yield analyses for Churchill Dam and Impofu Dam should be included to justify whether water from these dams is being fully utilised or not, so as to determine whether there is any possibility of additional abstractions for the Nuclear 1 Power Supply project.

4.5 Information gaps, omissions or errors

- **Section 2.1.1:** Details of the DWAF (2004) Water Resource Strategy report on which the conclusion that there is no allowance for water supply for power generation is based, should be summarised to justify this conclusion in the SRK Fresh Water Supply Report.
- **Section 2.2.1:** The discussion for Section 2.1.1 concerning the inclusion of summarised detail of the DWAF (2004) report also applies here to justify the fact that there are no water reserves for power generation for the Bantamsklip site.
- **Section 2.2.2:** No evidence of a water supply assessment for the Riviersonderend/Bree system was presented in the Fresh Water Supply report. The conclusion that water can be transferred from this system to Bantamsklip was arrived at only because this system is the closest major system to the Bantamsklip site. This conclusion is difficult to scientifically justify since there is no evidence that the required water volumes for power generation would sustainably be obtained from the Riviersonderend/Bree system.
- The report lacks clear maps, diagrams and figures to substantiate water supply options recommended in the report.

4.6 Sensibility of Recommendations and Presentation of Best Options

- The recommendations are sensible. The options provided would be more credible if substantiated by references, figures and volumetric graphs as mentioned in Sections 4.3 to 4.5 of this review.

4.7 Alternative Viewpoints Presentation and Clarity of Statement

- Alternative viewpoints are presented and clarified in the report.
- However, use of maps or diagrams could make descriptions/explanations clearer. For instance; clear maps showing location of supply boreholes, dams, reservoirs and the closest water resource systems would make explanations clearer and easier to understand.

4.8 Accessibility of Style of Report to Non-Specialists

- Technical jargon was generally explained and the report is understandable to non-technical readers.

4.9 Meeting of Normal Standards of Professional Practice and Competence

- The report meets the normal standards of professional practice and competence; areas that need improvement have been indicated above for the relevant sections of the report.

5 CONCLUSIONS

Water supply option conclusions need to be substantiated with figures and volumetric graphs from the referenced report (DWAF, 2004) and/or from onsite assessments or a yield analysis in the case of Impofu Dam and Churchill Dam.

Evidence of a water supply assessment for the Rivieronderend system or a credible reference is needed to substantiate the conclusion that this system can supply water to the proposed Nuclear Power Station for Bantamsklip.

The use of clear maps and/or diagrams is recommended to offer more clarity to water supply options being considered for the Nuclear Power Stations.

6 REFERENCES

- SRK. (2014). *Environmental Impact Assessment for the Proposed Nuclear Power Station (Nuclear 1) and Associated Infrastructure: Fresh Water Supply Environmental Impact Report*. SRK Consulting Engineers.

**SRK Responses to GCS Nuclear-1 Fresh Water Supply EIR Peer Review
(Report Version – 1 of 13 August 2015)**

GCS Review Comments (as Quoted)	SRK Responses
4.3 Technical, Scientific and Professional Credibility	
<p>Section 2.1.2: <i>A demand/supply analysis with volumes for the Churchill Pipeline Supply from the Churchill Dam would provide more credible conclusions as to whether this supply is being fully utilised or not, rather than totally relying on personal communication information. Personal Communication should be used as support of alternative volumetric data, as it can be difficult to justify in isolation.</i></p>	<p>Information from the Water Reconciliation Strategy of 2011 included. We didn't dig deeper into the underlying supply/demand data because desalination of sea water is the preferred supply option so there doesn't seem to be much point in providing lots of detail when surface water options are not under consideration, rather just some background information.</p>
<p>Section 2.1.2: <i>The fact that there is 'apparently no spare capacity from Impofu Dam' should be substantiated by figures, that is, demand/supply volumes, or a credible reference, and not based on personal communication alone, for the same reasons as the aforementioned Churchill Pipeline supply from Churchill Dam.</i></p>	<p>Quotes from the Reconciliation Strategy report of 2011 are now included</p>
4.4 Defensibility of Methodology and Study Approach	
<p>Section 2.1.1: <i>Details of the cited DWAF (2004) (Now Department of Water and Sanitation, DWS) document should be summarised in the Water Supply report in order to justify the conclusion that there is no availability of water reserves for power generation.</i></p>	<p>Updated report of 2011 now referenced</p>
<p>Section 2.1.2: <i>Yield analyses for Churchill Dam and Impofu Dam should be included to justify whether water from these dams is being fully utilised or not, so as to determine whether there is any possibility of additional abstractions for the Nuclear 1 Power Supply project.</i></p>	<p>Quotes from the 2011 Reconciliation strategy report now included</p>
4.5 Information gaps, omissions or errors	
<p>Section 2.1.1: <i>Details of the DWAF (2004) Water Resource Strategy report on which the conclusion that there is no allowance for water supply for power generation is based, should be summarised to justify this conclusion in the SRK Fresh Water Supply Report.</i></p>	<p>2015 Integrated Development Plan (IDP) report now used</p>
<p>Section 2.2.1: <i>The discussion for Section 2.1.1 concerning the inclusion of summarised detail of the DWAF (2004) report also applies here to justify the fact that there are no water reserves for</i></p>	<p>2015 IDP report now used</p>

<i>power generation for the Bantamsklip site.</i>	
Section 2.2.2: <i>No evidence of a water supply assessment for the Riviersonderend/Bree system was presented in the Fresh Water Supply report. The conclusion that water can be transferred from this system to Bantamsklip was arrived at only because this system is the closest major system to the Bantamsklip site. This conclusion is difficult to scientifically justify since there is no evidence that the required water volumes for power generation would sustainably be obtained from the Riviersonderend/Bree system.</i>	This option has been reassessed in light of the 2015 IDP report
Section 2.2.2: <i>The report lacks clear maps, diagrams and figures to substantiate water supply options recommended in the report.</i>	Figure 2.2 for the Bantamsklip site updated with more regional data
4.6 Sensibility of Recommendations and Presentation of Best Options	
<i>The recommendations are sensible. The options provided would be more credible if substantiated by references, figures and volumetric graphs as mentioned in Sections 4.3 to 4.5 of this review.</i>	Addressed, as indicated above
4.7 Alternative Viewpoints Presentation and Clarity of Statement	
<i>Alternative viewpoints are presented and clarified in the report.</i>	
<i>However, use of maps or diagrams could make descriptions/explanations clearer. For instance; clear maps showing location of supply boreholes, dams, reservoirs and the closest water resource systems would make explanations clearer and easier to understand.</i>	Addressed, as stated above