



CALVINIA BULK WATER SYSTEM - DRAFT BASIC ASSESSMENT REPORT COMMENTS RECEIVED (October - November 2021)

Date	Issue	Comment	I&AP	Response	Respondent
26 November 2021	General	We objecting to the issuing of a water use licence for the extraction of an additional 3.25 million m ³ of water per annum from boreholes. (A water use licence has not been issued by the Department of Water Affairs to date). The reasons for our objection are:	HJ Wilson - Calvinia Landbou Water	Noted. The WULA is running concurrently with the NEMA Application	EnviroAfrica
		1.1. The impact that the long-term extraction of such quantities of water will have on sustainable agriculture is of great concern. Although the test results at these boreholes (six of them) show that the source is currently sufficient, the longer-term impact on the surrounding boreholes that are much shallower will be catastrophic. Real time case studies are available from neighbouring towns such as Williston, Brandvlei and Loeriesfontein. This impact has not been assessed.		The possible impact of abstraction from the new boreholes was assessed by the geohydrologists during the WULA Groundwater Study conducted by GEOSS. Unfortunately, there are no guarantees that future abstraction by the municipality will not affect surrounding boreholes. The only way in which this matter can be successfully managed is by means of continuous groundwater monitoring. Subsequently it is proposed that permanent dataloggers be installed at unpumped monitoring boreholes within a radius of 1.5km and 3km from the proposed new production boreholes. The data of these loggers will then be assessed on a six monthly basis. It is proposed that a regional Groundwater Monitoring Committee be established in which these 6- monthly assessments are to be discussed and made available for all concerned parties. The local agricultural community will also be co-opted to serve on this committee.	Bvi Engineers
		1.2. It is not a long-term solution for the residents of Calvinia. If the resolution is to invest for the short to medium-term, then the total life-cycle cost should be compared with a proper long-term solution such as the piping of surface water from the Doringrivier. Historical cost tends to be forgotten when the boreholes run dry.		Abstraction of water from boreholes for Calvinia can be a medium to longterm solution, if the abstraction is carefully managed. The existing boreholes have been supplying Calvinia with water since 1996, which is in excess of 25 years! It is in the interest of the Hantam Municipality to manage the groundwater sources carefully, as the Karee Dam no longer has the capacity to be the sole source of water for Calvinia. It is the policy of the Department of Water And Sanitation that all possible groundwater abstraction must be utilized before any surface water will be allowed to be transferred over catchment boundaries. BVi Consulting Engineers has investigated and quantified the use of surface water in Calvinia from the Orange River (Keimoes), Doring River and the Olifants River. On each occasion the use of fresh water from these sources has proved to be too expensive.	Bvi Engineers
		1.3. The quality of the water planned to be extracted from the six boreholes is suspicious and may hold serious health risk to residents. The mitigation measures proposed ask for high skills levels and sound management to be maintained – coming with added cost.		The quality of the proposed groundwater is generally good, in so much as that the sources are not saline. There are however elevated levels of fluoride in several boreholes. This will be removed by an Ion Exchange process utilizing Activated Alumina to be located at the Calvinia Water Treatment Plant. A similar treatment process of smaller scale was constructed in Brandvlei in 2020, and Hantam Municipality have thusfar managed to operate and maintain it successfully. The cost of removing fluoride with this process is in the order of R2-55 per kiloliter, and is still considered to be affordable.	Bvi
		1.4. The process followed to date by the Hantam Municipality has serious shortcomings:			EnviroAfrica
		· The groundwater consultant appointed by the Municipality (Geoss) has interviewed a limited number of affected individuals. The impact will be much wider and more intense than suggested by the few subjective questions listed in the questionnaire. Existing boreholes must be measured and monitored over at least some seasons to determine the real impact of nearby deep extraction. We propose that the list of affected parties attached hereto be included in a scientific survey and monitoring programme.		The words "serious shortcomings" is based on opinion. The Water Use Lisence Application process stipulates that engagement must take place with parties that may be directly influenced by the proposed water abstraction, and this was done on 16th February 2021. All property owners on which proposed new boreholes are located and envisaged to be developed where engaged either inperson, or by means of written communication.	Bvi Engineers
		· Hantam Municipality equipped some of these boreholes and has installed pipelines and power infrastructure. None of the affected parties listed herein were consulted or informed about the project implementation. There is also no environmental management framework in place for these actions.		A single borehole along the Ceres-Karoo road was equipped by service providers appointed by the Department of Water and Sanitation. This borehole was equipped with temporary infrastructure under the Drought Relief Projects. Neither BVi, GEOSS or the Hantam Municipality had any say in this project. It was administrated by 3rd parties.	Bvi Engineers
		2. The engineering studies used to disqualify the alternative solution (Doringrivier surface water) is regarded as pre-feasibility studies. The outcomes were not independently reviewed, and the study is basically executed by the same practitioner to support the so-called cheaper option. We are questioning the following assumptions, just to mention a few:		BVi Consulting Engineers is an independent consulting engineering firm, and conducted the study in accordance with the rules and requirements of the Department of Water and Sanitation.	Bvi Engineers

		<p>Historical trend in population growth for Calvinia community is much higher than what is assumed in these studies and in this BAR. The net result is therefore that the "preferred solution" will not be sufficient for 15 to 20-years but closer to 5 years. The cost of the longer-term solution (Doringrivier) is therefore unfavourable compared to a much shorter-term solution.</p>		<p>The historical population trend used in the feasibility study was based on data from Statistics South Africa, being the only official data for population available. The statement of the Affected Party that the proposed solution will be sufficient for only 5 years is based on his opinion only.</p>	Bvi Engineers
		<p>The use of renewable energy and associated benefits were not considered in the studies.</p>		<p>BVI has had extensive experience with the use of Renewable Energy for pumping groundwater at both Loeriesfontein, Brandvlei and Onseepkans since 2014. The use of solar PV panels for powering submersible pumps is limited to a maximum of 7 hours per day. This means that these pumps need to be augmented either by battery systems or diesel-powered generators to allow pumping for the remaining part of each day. The alternative, is to abstract the same volumes of water over a shorter period, which has as result that infrastructure such as pipes and pumps need to be three times larger. The use of alternative energy is currently not a sustainable option for municipal water supply.</p>	Bvi Engineers
		<p>The historical cost of infrastructure installed to extract deep boreholes north-east of Calvinia was not considered. These boreholes ran dry as well as the surrounding (much shallower) boreholes used for farming purposes.</p>		<p>Or records indicate that the Hantam Municipality has never had deep boreholes for production purposes north-east of Calvinia. The only borehole that we are aware of, is the Kopasfontein Borehole, which is located on a breccia pipe. Studies were conducted in the 1990's to use this borehole for artificial recharge purposes, but was abandoned due to the high levels of arsenic contaminating the water in this borehole. We are not aware of any boreholes that have run dry as direct result of abstraction at this borehole.</p>	Bvi Engineers
		<p>The economic growth benefits of sufficient fresh water supply to Calvinia as a potential economic hub in the Northern Cape were not considered.</p>		<p>Again, this statement is a matter of opinion. The only way in which a "sufficient fresh water supply" can add significant economic growth, is if that water could be utilized for irrigation or the establishment of a water intensive industry. Unfortunately, the capital, as well as the calculated operational costs of bringing "fresh water" to Calvinia far outweighs the potential economic benefits of such a project.</p>	Bvi Engineers
		<p>We propose that the engineering studies be independently reviewed, and an economic cost benefit analysis be included.</p>		<p>The agricultural community is more than welcome to commission a study of this nature should they feel that it has been neglected. Similarly, they are free to pay for the cost of a review by a company of their choice if they are willing to pay for such a service.</p>	Bvi Engineers
		<p>3. Construction on the power line and water pipeline from the Kreitzberg boreholes has started. A considerable amount of taxpayers' money has already been spent, without any water use licence, environmental authorisation, or public participation. It makes this Basic Assessment submission an administrative process and the DENC merely a rubber stamp.</p>		<p>A single borehole along the Ceres-Karoo road was equipped by service providers directly appointed by the Department of Water and Sanitation. This borehole was equipped with temporary infrastructure under the Drought Relief Projects. Neither BVI, GEOSS or the Hantam Municipality had any say in this project. It was administrated by 3rd parties. The Department of Water & Sanitation should be approached in this regard.</p>	Bvi Engineers
		<p>4. The backbone of Calvinia and Hantam Municipal area's economy is still agriculture. The severe impact of this Project on agricultural water resources is not even mentioned in this Draft BAR.</p>		<p>It is agreed that agriculture is the primary economic driver in the Calvinia area. Both the Hantam Municipality, the Engineer and the Geohydrologists are extremely sensitive to the water resources of the agricultural community. It is not the intention of any of the parties involved to create a negative impact to the detriment of the agricultural community. All risks have been thoroughly assessed and recommendations made to manage these risks.</p>	Bvi Engineers
		<p>5. The Draft BAR mentions a zero-public response on the initial public participation process. There was no initial public participation process! Official objection from the agricultural community was submitted to the Municipality as well as an official response to the engineering study.</p>		<p>An initial comment period was conducted, which included a newspaper advert, posters along the pipeline route and other areas around Calvinia, and postage of notification letters to identified potential I&APs. These notices state that comments need to be sent to the EAP. No comment was received by the EAP from any I&AP during the initial PPP period.</p>	EnviroAfrica

		6. The health risks to the community of Calvinia of excess fluoride and arsenic from borehole water is understated or excluded from this BA submission. The community of Calvinia is also unaware of these risks.		The quality of the proposed groundwater is generally good, in so much as that the sources are not saline. There are however elevated levels of fluoride in several boreholes. This will be removed by an Ion Exchange process utilizing Activated Alumina to be located at the Calvinia Water Treatment Plant. A similar treatment process of smaller scale was constructed in Brandvlei in 2020, and Hantam Municipality have thusfar managed to operate and maintain it successfully. The cost of removing fluoride with this process is in the order of R2-55 per kiloliter, and is still considered to be affordable. To date, the community of Calvinia has not been exposed to these risks.	Bvi Engineers
		We propose that the piping of surplus surface water from the Doring River be considered as the longterm sustainable solution that will best serve the residents of Calvinia. A pre-feasibility study initiated by the Hantam Municipality should be independently reviewed and taken to a bankable feasibility level before more money is spent on the short-term solution that may prove fruitless.		This option was considered and investigated. It is technically feasible, but due to the large difference in elevation between the Doring River and Calvinia, the cost of pumping this water is excessive and not affordable by the Hantam Municipality. The feasibility study was taken under consideration by the Department of Water & Sanitation and many questions were asked and answered. The Department approved the Feasibility Study in September 2021 and funding will be forthcoming for implementation.	Bvi Engineers
29 November 2021		As owner of the farm Vlakfontein, I object to the proposed developments to abstract large amounts of water from Vlakfontein and neighbouring farms. I have also serious concerns about the way in which I as a landowner, been treated and taxpayer's money been spend.	Nathan Wilson - Farm Vlakfontein	Noted	
		1. As a citizen of this country, I paid large amounts of money for this farm. It is my right to utilize these resources to the best of my abilities to return an income. Any degrading of this property, either by die drying up of boreholes or wetlands, leads to lessor income in the first place and in the second place a devaluation of the value of my asset. The municipality can by no means, safely project what will be the outcome of extracting such large amounts of water. From experience elsewhere in the Karoo and even on this farm, it can be certain that serious water problems lays ahead in the future.		The possible impact of abstraction from the new boreholes was assessed by the geohydrologists during the WULa Groundwater Study conducted by GEOS. Unfortunately, there are no guarantees that future abstraction by the municipality will not affect surrounding boreholes. The only way in which this matter can be successfully managed is by means of continuous groundwater monitoring. Subsequently it is proposed that permanent dataloggers be installed at un pumped monitoring boreholes within a radius of 1.5km and 3km from the proposed new production boreholes. The data of these loggers will then be assessed on a six monthly basis. It is proposed that a regional Groundwater Monitoring Committee be established in which these 6- monthly assessments are to be discussed and made available for all concerned parties. The local agricultural community will also be co-opted to serve on this committee.	Bvi Engineers
		2. Farming in the Karoo dated over centuries. Underground water resources are mainly been used for drinking of livestock and a few households. This keep a balance of the low rainfall and not over utilising the ecosystem. Wherever a mass scale pumping has been done, serious effects, soon develop like boreholes, fountains and wetlands drying up in a wide circle. The problem gradually creeping in and the degrading is sometimes buffered by years of good rainfall. The drying up of the ecosystem is most noticeable in periods of extended droughts. The frequency of droughts and seasonal droughts are been accelerated by these unnatural extraction and the abuse of the system.		The respondent is correct in that water use for livestock has a relatively low impact on groundwater compared to abstraction for municipal supply. Again, the only manner in which this risk can be mitigated is by regular monitoring of groundwater levels, and the timeous reaction to any negative results. It is in the Hantam Municipality's best interest to maintain and protect their groundwater resources to the best of their ability. The geohydrological study makes recommendations as to the allowable quantities to be abstracted as well as to the allowable periods of abstraction for each borehole. This is to be closely monitored by the Department of Water and Sanitation on a bi-monthly basis.	Bvi Engineers
		3. The way in which Government and local municipalities approach long term assets and funding over the past few years, do not send a trustworthy signal, that they embrace long-term sustainability.		This is an opinion not supported by facts. The planning and investigations that goes into a project of this nature can take up to 5 years of work before it is even considered for implementation.	Bvi Engineers
		The management and control of this proposed telemetric system, ask for highly skilled people, who is not always available in a town like Calvinia. The problem is mainly the integrity of running the system. To entrust ill equipped managers of a local municipality, with a highly sensitive resource, which was for generations the livelihood of farming communities, is of great concern. The absence of mature farming leaders, which was the visionaries and strategic thinkers in the past, is also of great concern. Their dept of character (like the Karoo Busch) made them survived the severest of droughts. We can learn from them to be extremely conservative, with the utilization of underground water.		This comment makes assumptions as to the ability of the municipal personnel to operate and maintain the telemetric and groundwater systems, which is uncalled for. It is agreed tha the management of groundwater as a resource is a highly sensitive resource. Subsequently, operational rules and conditions have been put in place in order to manage this risk as far as possible. It is proposed that a regional Groundwater Monitoring Committee be established in which 6- monthly groundwater assessments are to be discussed and made available for all concerned parties. The local agricultural community will also be co-opted to serve on this committee.	Bvi Engineers

		The time horizon (period) of 20 years to write off this project at a cost of R184 million, is not feasible in the light of highly risky sustainability of water supply. Risks is been taken in the absence of strategic thinkers who do have knowledge about the ecosystems. In the meantime farmers suffer from boreholes and fountains that dry up, extra costs of deeper water levels and lots of land, that cannot be grazed.		The timeline for the capitalization of the project is open for debate, but the Respondent must note that there is no payback by the municipality, as this project will be 85% funded by a government grant. With regards to strategic thinking and people who have knowledge of ecosystems, all the specialists used in assessing the groundwater system, the freshwater system, the biodiversity etc, are highly experienced professionals with in excess of 20 years experience. We have sympathy for the farmers, but when farming, you also need to accept the risks associated with nature which cannot always be controlled.	Bvi Engineers
		4. The political and social system of supplying grants and free housing leads to unnatural growth and scarcity of water. This imbalances can best be met by a more long-term thinking and the option of surface water. Political points can be score by building houses. That is most of the time money well spent, but the investment in a critical resource like water is not a matter of quick fix. If we count the historical costs of hundreds, if not thousands of boreholes, left dry, the repetition of erecting every time new infrastructure of pipelines and power lines - a clear picture is developing. Lessons need to be learned before we destroy the last wellfieds and it became impossible to do the alternative step to get water from the Doornrivier.		Agreed, the provision of housing and social grants does lead to unnatural population growth in small towns. It is however a fact that the municipality must deal with in terms of the constitutional rights of individuals. Boreholes that dry up are due to many reasons, of which climate change and erratic rainfall being the most prevalent. Again, it is the policy of the Department of Water and Sanitation that for towns not loacted near surface water sources, that all potential groundwater be exploited before they will consider transferring surface water across catchments.	Bvi Engineers
		5. Once, I met a big group of German tourists along the Ceres road. Everyone staring with his binoculars to birds. I was amazed that they find it excited to travel this dry and arid road instead of the famous Garden Route. Yet the birds need water and the only source of water is most often a water trough that's been maintain by a farmer. Sometimes the one and only water point in an area of thousands of hectares are the livelihood of the jackals, reptiles, and bucks exc. The Karoo are not like most of the places where crop farming takes place. Naturist fined the amount of animal and bird life exciting and we need to treasure this. They all need water.		Agreed, and the farmers look after their water resources because that is the only resource that makes it possible for them to farm in such an arid area. Likewise, the municipality fully understand their responsibility when it comes to managing and maintaining these resources.	Bvi Engineers
		6. In our thinking of ecosystems we dare not suppress the importance of semi- or permanent fountains and waterways in the Karoo. In my experience as Agriculture Extension Officer and Agricultural Economist, I moved around quite a lot over the whole of the Karoo. The extensive damage done by pumping of water to wetland systems is shown over and over again. Therefore the critical important law of the Dept. of Water and Sanitation, that farmers must not extract water for more than three quarter of a hectare of irrigation, yet millions of mega litres water for human consumption in towns is ok and does not abuse the ecosystem? The borehole on my farm (Vlakfontein), though in the road reserve is about 500 m from my own windmill, which run dry and I cannot use die adjacent camp which it supply. This new municipal borehole which they plan to use extensively, is laying close to a waterway with 4 semi- to permanent fountains (mostly seasonal), that pass my farmhouse. I am very sure that as soon as the municipality start to pump, I will not only have big problems with my house water, but it will be the last of green patches alongside die road, right down to the last fountain.		Unfortunately, in our country, the public interest legally always outweighs the individual interest. Subsequently, a municipality will always have the first right to use water for human consumption. The use of groundwater by a municipality does not have to be to the degree where an individual farmer is negatively affected. This situation can and must be monitored, as there is no other way of mitigating this risk. Subsequently, a condition has been set whereby any water resources such as existing windpumps for livestock watering within a 1.5km radius of the new boreholes will be permanently fitted with dataloggers. This data must be analyzed and assessed on a six-monthly basis. It is proposed that a regional Groundwater Monitoring Committee be established in which these 6- monthly assessments are to be discussed and made available for all concerned parties. The local agricultural community will also be co-opted to serve on this committee.	Bvi Engineers
		7. The local municipality did not visit me or talk to me about the borehole, they planned to sink on my property. The excuse that the borehole is in the road reserve, is of no value in the light of the above arguments. Seen in the light of dark clouds hanging over the head of every landowner. Clouds like the worst drought ever seen, expropriation of land without compensation and looting of state funds everywhere, leaves farmers with an expectancy of further abuse of his rights and a government, which excel in his 'predator status'.		When Hantam Municipality embarked on the exploration drilling project in 2018, they were met by fierce resistance from the local agricultural sector. Many of the farmers refused the geohydrologist and the drilling contractor access to their land for drilling boreholes. The Hantam Municipality could have approached the courts for a court order to gain access, but due to time constraints and the urgency, they were left with no choice but to drill in public land, being the road reserves. BVi Consulting Engineers were informed by a farmer, which will not be named, that the local agricultural union had taken a collective decision not to allow anybody onto their land for drilling boreholes. Subsequently, drilling was done in the road reserves, being public land.	Bvi Engineers
		8. The investment in infrastructure like boreholes, windmills, dams and water troughs came over generations at a huge cost. If any borehole dried up, the infrastructure degrade, no more grazing in this veld and even the death of small wild animals. Since 2017 a few important boreholes dried up on Vlakfontein which led me to transport water during night times and giving fodder during the day. The only contractor available sinking holes for the municipality was not interested to help me in my need. With cash flows at its lowest, I had to sink 4 more boreholes to keep on farming.		We have great sympathy with this predicament that you found yourself in. It was however due to an extended drought that your boreholes dried up, and not caused by the municipality or this project. We cannot speak for the drilling contractor, or why he was not interested in assisting you. It must be taken into account that this project came about because of the extended drought and the rapid decline in water resources of the municipality. You and Hantam Municipality therefore find yourselves in similar circumstances.	Bvi Engineers

		9. The deepening of the overall water levels has an influence on every borehole, which must be refurbished with more pipes at a major cost. These cost is not reflected in the proposed project. <i>It is suggested that a very serious monitoring system of boreholes in a wide enough area been done, on a continuous basis.</i> If these losses been calculated in rand, the cost results will be astonished.		The use of deep boreholes does not necessarily mean that shallower boreholes will be affected, as they are often not interconnected and tapping into totally different aquifers. The setting up of a wide area monitoring system is a given and has been set as a condition for the use of the new boreholes. The monitoring system will make provision to install dataloggers at a radius of 1.5km and 3km into existing boreholes that are not used for production, but purely for regional monitoring. The data from these borehole loggers must be analyzed and assessed on a six-monthly basis. It is proposed that a regional Groundwater Monitoring Committee be established in which these 6- monthly assessments are to be discussed and made available for all concerned parties. The local agricultural community will also be co-opted to serve on this committee.	Bvi Engineers
		10. Page 13 of the Draft Basic Assessment Report, mentioned about the sustainability of the different options. It said very strongly: <i>" It must however be kept in mind that groundwater development is heavily dependent on rainfall and as such needs to be managed very carefully to ensure its sustainability. If this management is not done diligently and the rainfall again stays away for 5 years, the town of Calvinia may end up in the same situation, they are in now."</i>		Agreed, and we have made the Department of Water and Sanitation aware of this possibility. Hence our request to implement the wide area monitoring system and the regional Groundwater Committee to ensure that these conditions are adhered to and that the sustainability is protected as far as possible.	Bvi Engineers
02 December 2021		1. Lede van Hantam-Roggeveld Boerevereniging het my versoek om hulle bekwommernis ivm bogenoemde projek onder die aandag te bring. Dit geskied na aanleiding van die publieke deelname proses wat tans plaasvind. Individuele lede het kommentaar gelewer maar hierdie skrywe is voorgestel deur die gemeenskap rondom genoemde projek.	Deon Slabber - Sekretaris: Hantam-Roggeveld Boerevereniging	Noted	
		1.1 Die genoemde vereniging beslaan 'n groter gebied maar die projek op die R355 Ceres – Karoo pad val binne die gebied.		Noted	
		2. Die grootmaat onttrekking van ondergrondse water deur middel van boorgate, kan nie op die langtermyn volhoubaar wees nie.		It is the policy of the Department of Water And Sanitation that all possible groundwater abstraction must be utilized before any surface water will be allowed to be transferred over catchment boundaries. BVi Consulting Engineers has investigated and quantified the use of surface water in Calvinia from the Orange River (Keimoes), Doring River and the Olifants River. On each occasion the use of fresh water from these sources has proved to be too expensive.	Bvi Engineers
		3. Die voorgestelde alternatief is die Doringrivier projek.		This option was considered and investigated. It is technically feasible, but due to the large difference in elevation between the Doring River and Calvinia (900m vertical difference), the cost of pumping this water is excessive and not affordable by the Hantam Municipality.	Bvi Engineers