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Swartvlei Equestrian Estate (Pty)Ltd
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To whom it may concern

DAM REPORT FOR NEW DAM REPLACING FOUR REDUNDANT DAMS ON FARM HOOGEKRAAL 182 PORTION 1

Process followed in this dam application.

1. **BACKGROUND**
   This dam was planned to replace two existing dams that are registered on the National register of water use 22118414 the total amount of storage is 134 080m3. The volume of the dams was calculated from detail surveys and the volume for the registration for 5 Dams were was 72 080m3 but after the survey it is 119 350m3 and an additional storage of 62 000m3 is also on the registration document. This farm gets its water from Wolwe river. We are not applying for additional volume of extraction and will still be within the allocated storage as per the registration.

2. **ASSIGNMENT**
   The assignments were that Atkinson Survey and Design will handle the design and supervision of the new Dam project. We evaluated the area and chose a position to build the dam. This dam is a out of stream and not close to the Swartvlei lake. Information was gathered about the possible Environmental Impacts, currently there seem to be one trigger point, the volume is greater than 50 000m3. There no triggers from the Swartvlei as the dam is further than 150m away from the high water mark.

   We were also contracted to do the E-WULA with BGCMA.

3. PROPOSED SITE

The site was chosen because we it is the most suited for the dam and connections to existing infrastructure . All the infrastructure is already in place.
In our opinion the dam has a low risk factor.

4. WATER AVAILABILITY

The current extraction is from the Wolwe river. The available amount is 555 607m3 per year. This water is only available if the river runs. In the past 3 years the river stopped flowing for a few months at a time. There is a borehole with a volume of 151 546m3 included in the above volume.

5. STATUTORY REQUIREMENTS

The dams are part of the current registration of 22118414. We have started the process of applying replace the Four dams with one new dam and staying within the registration volumes.

6. GEOLOGY

No testing was needed as the material, was a good quality clay. The best material will be selected for the core and internal parts of the dam.

7. THE PROCESS

All documentation is at BGCMA and submitted on the E Wula system.

8. GENERAL INFORMATION

Dam wall Height :4.5m
Storage Capacity: 106 000m3
Water full area: 23 275m2
Depth of Dam Full level: 7.5m
Wet wall Ratio: 1:3
Aft wall Ratio : 1:2.5

If you have any questions, please feel free to contact me.

Allan Atkinson

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METHOD STATEMENT FOR REPLACEMENT OF FOUR EXISTING DAMS WITH ONE DAM WITH A VOLUME OF 106 000M3 ON THE FARM HOOGEKRAAL 182 PORTION 1

Overview

The Farm's water is Registered Reg: 22118414 for both taking and storing of water. The two dams were broken a few years ago and is in our opinion too dangerous to repair as it is high in the mountain. The water needed to be pumped from the source to these storage dams. With the new dam the water can enter the dam under gravity pressure and will have a huge saving in electricity. The storage of water is important as the river is dry certain times in a year.

Technical information

Extraction From the river:

There is existing infrastructure at the river and currently there are no need to upgrade the take off out of the river. There are currently an existing mainline taking water to the storage dam. We are not going to exceed the water registration and are not asking for an increase of volume.

Construction Information

The client is currently under great strain as he only have storage of about 60 000m3 and he is doing a development of over 100 Ha. This dam will be constructed from material found in the basin of the dam the complete area on the inside of the dam will be layered with 500mm clay and compacted. When construction takes place, a new suction will be put in at the lowest point of the dam. This pipe will be in reinforced concrete with proper cut off flanges.

The material found on site at a depth of 1m is suitable for dam construction. The construction will be divided into certain disciplines.

Core excavation

The Core will be excavated to a depth of 3m and 3m wide that will be filled and compacted to a 96 -98% Compaction. The material will need to have a moisture content of 3% above optimum moisture. The compaction layers should not exceed 100mm at a time and compacted with a patfoot compactor. The soil to be used are the best clay content available on site.

Waterside of dam wall

This area is to be build with a ratio of 1:3 slope and also compacted to the 96-98% compaction. This material can be semi permeable. The layers of compaction should not exceed 100mm

Outer dam wall

This area is constructed with the remaineder of the soil in the dam basin. The ratio should be 2.5:1. The compaction should be 96- 98% compacted with a 3% above optimum moisture. The slope should also the covered with topsoil.

Suction pipe

A 200mm uPVC Class 9 pipe with solvent weld joints will be installed in a reinforced cradle together with cut off flanges. The outlet valve will be bolted to the reinforced concrete butt wall. This is done for safety reasons. The outlet valve will be a 200mm AFK type valve with a resilient rubber seal. A strainer will be installed on the water side. No water meter will be installed as the watermeters are inside the pumproom.

Equipment to be used

A 22Ton Excavator, 2x B18 Dump trucks, Padfoot compactor, D6 Dozer and water tanker with tractor will be used.