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**Cultural Heritage Impact Assessment
for
Shafts #1 to #7, Orkney, Northwest Province, South Africa,
for
CAPM Gold.**



March 2015.

Report prepared by: -



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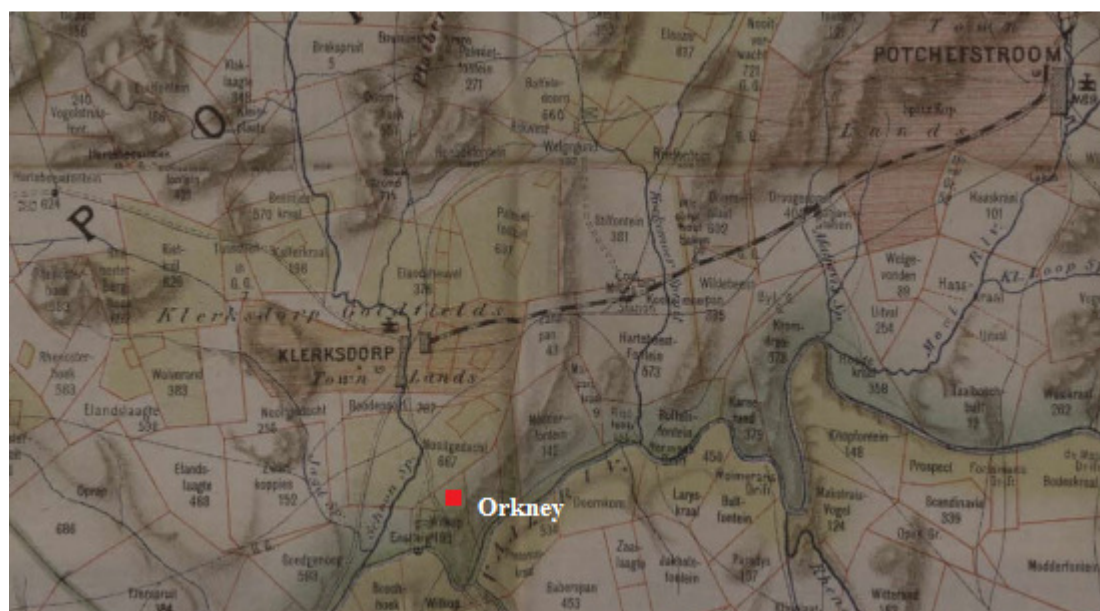


Fig. 01. Above image shows the location of Klerksdorp (Orkney only 1940) relative to Potchefstroom in 1899. (*Jeppes Map of the Transvaal (sheet 4) of 1899.*) All the light green shaded farms and the Klerksdorp Town Lands are areas of gold mining with varying successes. This image shows the Klerksdorp Goldfields in historical context. (*Haughton, 1940, pp- 171.*)

1. Contact Details.

1.1. Developers.

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 Fax. 086 732 4755.
 E-mail. louislamsley@capm.co.za

1.2. Consultants.

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1.3. Type of Development.

Mining.

1.4. Zoning of Site.

Mining.

2. G.P.S. Coordinates of the sites investigated.

Description of site		Degrees south	Degrees east
Site 1.	No # 1 shaft	26° 56' 17. 24"	26° 44' 15. 80"
Site 2.	No # 2 shaft	26° 56' 05. 95"	26° 45' 51. 18"
Site 3.	No # 3 shaft	26° 56' 59. 30"	26° 43' 04. 69"
Site 4.	No # 4 shaft	26° 55' 03. 21"	26° 42' 36. 06"
Site 5.	No # 5 shaft	26° 54' 48. 89"	26° 45' 09. 88"
Site 6.	No # 6 shaft	26° 58' 09. 18"	26° 39' 33. 34"
Site 7.	No # 7 shaft	26° 57' 18. 33"	26° 40' 18. 09"
Site 8	Offices	26° 58' 02. 90"	26° 40' 04. 83"



Fig. 02. Above is an image showing the relationship of CAPM Gold Orkney mines (yellow markers) to other gold mines (green markers) in the area. (Google Earth image 2014 and author's annotations.)

3. Executive Summary.

3.1. Historical milieu.

The identification of the *Klerksdorp goldfields* is generally attributed to *A.P. Roos* when in 1886, on the farm *Rietkuil*, he first laid eyes on payable ore. Soon after this more claims were also pegged on the *Klerksdorp Town Lands*. At the same time *Simon Fraser*¹, one of the gold mining pioneers of the 1880^s, pegged out his claim on the farm *Witkoppen* where *Orkney* is located at present. This discovery led to lively prospecting in the area and in 1895 there was already seventeen companies registered as gold-mining syndicates on the Klerksdorp goldfields. (See figure 11.) The pyritic nature of the ore originally hampered the extraction of the precious metal limiting the yield of this specific gold field. Similarly the Second South African War and the First World War also placed a damper on the development of the Klerksdorp gold fields. With the accumulation of wealth from the Rand gold mines in the 1920's and 1930's, investment became available and new chemical processes were developed that enabled the renewed exploitation of the Klerksdorp Gold Fields.

A first generation of deep level mines were established in the late 1930's around Klerksdorp. According to *Haughton (1940, pp-171)* there were eight of these. In 1938 Western Reefs mine was established on Witkoppen and the town of Orkney was founded in 1940. As in the case with the First World War, the Second World War again severely limited gold production and mining development at this locality.

After 1950 a second generation of deep-level mines were established by international companies and many of the old mines were upgraded to comply with modern mine safety regulations and laws. Most of these mines were forced to close down or retire into maintenance phase owing to the decline in the gold price in the 1990's and the rising demand for increased wages by union driven workers demands. Other mines switched to other mining prospects such as uranium.

Since then there was a spiralling exchange of mining properties between numerous companies that often focussed on reclaiming valuable infrastructure such as machinery, buildings mainly constructed from iron/steel and clad with corrugated iron, and valuable headgear structures.

In a last cycle of re-arranging ownership the seven sites and shafts that are under investigation was procured by CAPM Gold from the controversial Pamodzi Gold Company. It is the intent of this CAPM Gold, to reinstate gold mining on the sites procured. As part of the environmental impact assessment it is therefore necessary to conduct a heritage impact assessment that is the reason for the current report.

The results of the report is then in fact a combined reflection of the historical context of the Orkney group of mines, as well as the economic factors for re-instating mining on the seven sites.

3.2. Existing parameters.

In the first place there is a distinct difference between sites #3, #6, and #7 that is clearly linked to the first development group dating to late 1930 and the remaining sites #1, #2, #4 and #5 that were established post 1960.

Secondly it is also clear that all of these mines were continuously expanded, added-to and modernised according to mining safety regulations over time.

¹ *Simon Fraser the first to discover gold on Witkoppen was born on the Orkney Isles off the north coast of Scotland.*

Finally, owing to the CAPM Gold mine financial policy, it is of utmost importance that the retention and ongoing maintenance of existing infrastructure is central to the viability of the proposed mining objectives.

3.3. Summary of findings.

The detail referred to in the last three paragraphs above is then reflected in the conditions recorded during the site investigation on the 9th of March 2015. Below is given the historical impacts as perceived based on mining objectives and the prescriptions of *Act 25 of 1999* also known as the *National Heritage Act*.

Site #1. This site with modern concrete headgear is dated post 1960 and therefore falls outside of the protection of Act 25 of 1999. Even so the mining objectives states that all of the existing infrastructure will be retained apart from two office buildings that are superfluous to mining objectives. Whether these will be demolished or not has not yet been finalised.

No mitigation measures are necessary.

Site #2. This site with modern concrete headgear is dated post 1960 and therefore falls outside of the protection of Act 25 of 1999. Even so the mining objectives states that all of the existing infrastructure will be retained. This infrastructure includes a large compound or living quarters for labourers that will be maintained for the use of CAPM Gold either for its own labour or for rental to the public that may require accommodation.

No mitigation measures are necessary.

Site #3. This site with traditional riveted steel headgear is dated to the end of the 1930's. The whole of the site has been demolished apparently without a demolition permit. When this event occurred and on whose responsibility is not clear but Google Earth images suggests that it was an ongoing process from 2009 onwards culminating between 2011 and 2015. *The site is protected by section 34 (1) of Act 25 of 1999, and is rated as "General protection" A (Field Rating IV A) by the SAHRA minimum standards May 2007, therefore cannot be altered or destructed without a demolition permit issued by the relevant heritage authorities. (See figures 32 to 43.)*

Mitigation is required to address this issue.

Site #4. This site with modern concrete headgear is dated post 1960 and therefore falls outside of the protection of Act 25 of 1999. Even so the mining objectives states that all of the existing infrastructure will be retained. This infrastructure includes a large compound or living quarters for labourers that will be maintained for the use of CAPM Gold either for its own labour or for rental to the public that may require accommodation.

No mitigation measures are necessary.

Site #5. This site with modern concrete headgear is dated post 1960 and therefore falls outside of the protection of Act 25 of 1999. The whole of the site has been demolished apparently without a heritage study compiled. When this event occurred is not clear but Google Earth images suggest that it was already mostly demolished by 2005 onwards. Mitigation is not required to address this issue. The remaining infrastructure includes a large compound or living quarters for labourers that will be maintained for the use of CAPM Gold either for its own labour or for rental to the public that may require accommodation.

No mitigation measures are necessary.

Site #6. This site with traditional riveted steel headgear is dated to the mid 1930's. Even so it reflects alterations and updating over time. The whole of the site is still intact. The mining objectives of CAPM Gold states that the site will be retained as-is. It will be maintained in its present format allowing for and according to modern mining safety regulations.

No mitigation measures are necessary.

Site #7. This site with traditional riveted steel headgear is dated to the mid 1930's. It is possibly the most representative of the early period of mining in the region. Even so it reflects alterations and updating over time. Most of the site is still intact. The mining objectives of CAPM Gold states that the site will mainly be retained as-is. It will be maintained in its present format allowing for and according to modern mining safety regulations. These are all rated as "General protection" A (Field Rating IV A) by the SAHRA minimum standards May 2007, therefore cannot be altered or demolished without a demolition permit issued by the relevant heritage authorities. (See figure 97.)

Mitigation is required to address this issue if any building becomes superfluous or are neglected.

Site 8. This office complex comprises a whole town block in Orkney. The site clearly post-dates 1960 and therefore falls outside of the protection of Act 25 of 1999. Even so it will be maintained for the use of CAPM Gold either for its own personnel or for rental to the public that may require office space. Alternatively it can also be changed into a public facility such as a school, clinic or old-age accommodation facility.

No mitigation measures are necessary.

13. Recommendation.

13.1. It is recommended that the mining objectives of CAPM Gold are adhered to and that historical infrastructure is retained and maintained and reused in modern mining context. Structures are only to be altered if so required by modern mining safety regulations.

13.2. It is recommended that CAPM Gold approach the heritage authorities to demolish any buildings found superfluous to their activities. The normal procedure of a second phase study must be followed and a demolition permit must be applied for and granted by the appropriate heritage authorities before the requested demolition proceeds.

13.3. It is recommended that CAPM Gold must comment on the demolition of site #3 and that this comment must be evaluated by the appropriate heritage authorities.

13.4. It is recommended that a Heritage Management plan is compiled so that heritage resources can be monitored during periodical environmental auditing processes.



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4. Definitions.

The broad generic term *Cultural Heritage Resources* refers to any physical and spiritual property associated with past and present human use or occupation of the environment, cultural activities and history. The term includes sites, structures, places, natural features and material of palaeontological, archaeological, historical, aesthetic, scientific, architectural,

religious, symbolic or traditional importance to specific individuals or groups, traditional systems of cultural practice, belief or social interaction.

5. Protected Sites in Terms of the National Heritage Act, Act. no. 25 of 1999.

The following are the most important sites and objects protected by the National Heritage Act:

- a. Structures or parts of structures older than 60 years
- b. Archaeological sites and objects
- c. Palaeontological sites
- d. Meteorites
- e. Ship wrecks
- f. Burial grounds
- g. Graves of victims of conflict
- h. Public monuments and memorials
- i. Structures, places and objects protected through the publication of notices in the Gazette and Provincial Gazette
- j. Any other places or object which are considered to be of interest or of historical or cultural significance
- k. Geological sites of scientific or cultural importance
- l. Sites of significance relating to the history of slavery in South Africa
- m. Objects to which oral traditions are attached
- n. Sites of cultural significance or other value to a community or pattern of South African history

6. Methodology.

1. The area was visited on the 9th of March 2015 in company of Me. Emma Vorster (emma@shangoni.co.za) and Mr. Jan Nel (jan@shangoni.co.za) of Shangoni Management Services (Pty.) Ltd.

2. On site of the premises of shaft #7, that is at present being used as site offices for CAPM Gold, the general manager of operations Mr. Louis Lamsley (Louis.lamsley@capm.co.za) explained the operational objectives of CAPM Gold regarding the seven shafts, shaft sites and compounds or living quarters that was acquired by the company from Pamodzi Holdings to the author and the Shangoni representatives.

3. The seven sites and the old office building complex in Orkney were then visited by the group in the following order. First the #7 shaft site was inspected followed by #6 shaft site. Then the offices in the town were visited followed by site #3. Next followed sites #1 and #2 shafts, and lastly the sites of #5 and #4 shafts. The round trip to the eight sites was undertaken by motor vehicle owing to the distances involved.

4. Each site was individually inspected on foot and photographs were procured of such buildings as deemed representing of the historical merit of the sites. In the cases of the two demolished sites #3 and #5 photographs were procured from Mr. Louis Lamsley of site #3 as it appeared pre-demolition but no images are available of site #5 in its pre-demolished state.

5. Mr. Louis Lamsley stated the intent of CAPM Gold that most of the infrastructure, buildings offices and compound were to be retained for the purposes of the re-instatement of the seven sites as a gold-production unit in the near future. This includes both historical features as well as later dated facilities.

6. Mr. Louis Lamsley stated the wish of CAPM Gold that five of the historical workshops located on the #7 shaft site may be demolished, (if demolition permits are granted by the heritage authorities) as they are superfluous to the planned mining objectives.
7. Mr. Louis Lamsley stated the intent of CAPM Gold that all the remaining buildings and facilities that had fallen below acceptable mining safety regulation will be repaired and re-used in the planned mining operations.
8. All the above information was recorded and collated in section 9 of this report.
9. Background information concerning the geology and vegetation of the region was collected from reliable resources and is presented in section 7 of this report.
10. Background information concerning the archaeology and historical milieu of the region was collected from reliable resources and is presented in section 8 of this report.
11. In sections 10 and 11 field ratings (SAHRA minimum standards May 2007) and statements of significance (SAHRA minimum standards May 2007) were attributed to the buildings and sites as necessitated by individual situation.
12. Section 12 contains a summary of the research results with a recommendation in section 13.
13. The collective gist of the information collated in the report is summarised in the executive summary in section 3.
14. Appendix 2 reflects the same information as contained in sections 10 and 11 of the report but evaluated against stipulations of the larger Environmental Impact Assessment in terms of risk before and after mitigation.
15. Appendix 1 contains a declaration of independence by the author.
16. The routes taken during the on-foot inspection is recorded with the documentation of each site and the general route undertaken by motor vehicle is recorded in **figure 03**.



Fig. 03. *Left is an image showing the route (marked in red) undertaken in Orkney to visit the eight CAPM Gold sites under investigation. The seven shaft sites and the old office building complex in Orkney were visited in the following order:-. #7 shaft site, #6 shaft site, the offices in the town, #3 shaft, #1 shaft, #2 shafts, #5 shaft and #4 shaft. The round trip to the eight sites was undertaken by motor vehicle owing to the distances involved. Each individual site was inspected on foot according to the historical merit of the site. For this on-foot site routes see individual site recordings in Section 9. (Google Earth image 2014.)*

7. Environment.

7.1. Geology. (See McCarthy & Rubidge, 2005, for full description.)

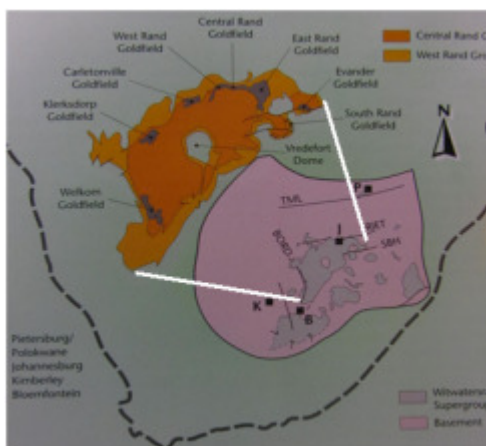
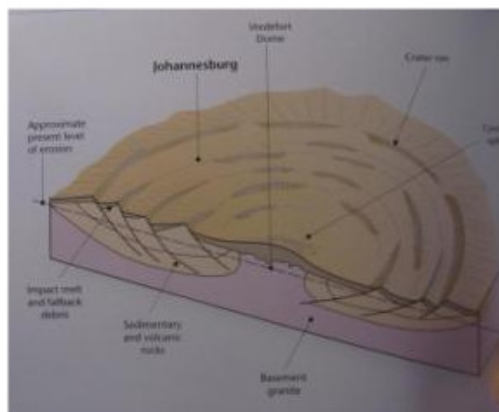
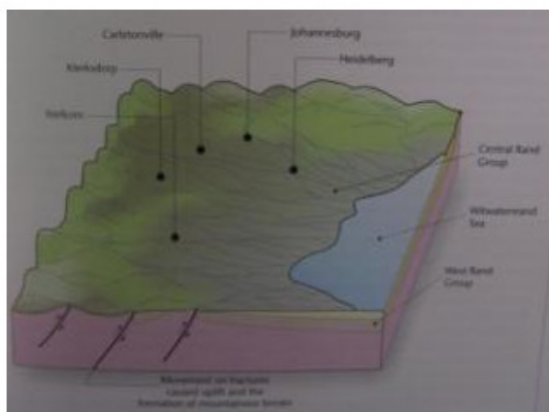


Fig. 04. Left is a diagram explaining the structure of the Witwatersrand super group. The remains of two pre Pangean continents, the Kaapvaal Craton and the Zimbabwean Craton collided some 2700 million years ago. This resulted in the tilting of the Kaapvaal Craton and the erosion and winnowing of heavy metals into a shallow sea. The area shaded pink is an estimated shape of the Transvaal Craton, while the orange area is an enlargement of the central goldfields. (McCarthy and Rubidge, pp -102.)

If it had not been for the mineral composition of the geological under-build of the region then it is very possible that this structure will have not existed: - the gold deposits, and its associated minerals, that were deposited along the world famous MAIN REEF. The origins of these geological phenomena are a rather complex narrative, which possibly only a few geologists fully understand. We quote from McCarthy and Rubidge, page 102:

... ‘The rocks of the Witwatersrand Supergroup were originally widely distributed over the Kaapvaal Craton, but much has been removed by erosion, leaving only the scattered remains shown in figure 04. The enlarged (orange) inset shows the main area of preservation of the Witwatersrand Supergroup basin. The major goldfields occur in an arc around the western and northern sides of the basin. The locations of these goldfields were determined by earth movements along faults such as the Thabazimbi-Murchison (TML) Line, the Rietfontein (RIET) Fault, the Sugerbush (SHB) Fault and the Border (BORD) Fault’...

The geologists continues with their narrative that the crust tilted again trapping the gold deposits on the one side of the Transvaal basin between 2 700 and 2 000 million years ago. With the impact of the Vredefort meteorite, large portions of the gold bearing geological structures were infolded by the impact phenomena, effectively shielding it against erosion and therefore preserving large portions of the original deposits.



Figs. 05 to 06. Above can be seen diagrams explaining the two most important reasons for the central South African Goldfields; - dilution of heavy minerals into ancient maritime environments and the Vredefort meteorite impact event. (McCarthy and Rubidge, pp- 103 and 136.)



Fig. 07. Above is an image showing the cluster of Klerksdorp/Orkney mines (green) in relation to the Welkom, Carletonville, Johannesburg and Springs gold fields as can be seen on Google Earth. (Image from 2014, with author’s annotations.) Here can be seen the actual model of the Central South African gold fields that has produced fortunes in gold. Compare with geological model in figure 04.

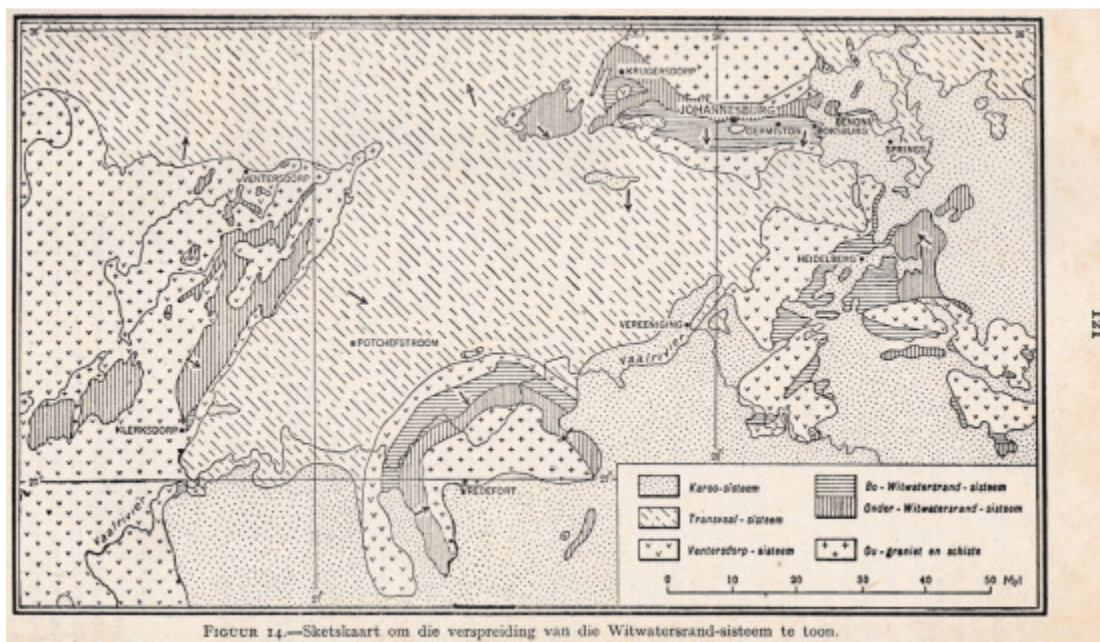


Fig. 08. Above. Already in 1940 the office of die *Afdeling Geologiese Opname*² of the Union of South Africa in Pretoria was able to produce the above geological map of the gold bearing region of the Witwatersrand System. This is most probably due to the wealth generated by the early mining industry in Johannesburg and their investment in drilling and geological surveying with the aim of expanding gold mining operations. (Haughton, 1940, pp-121.)

² Department of Geological Survey.



Fig. 09. Above. Looking west from above Johannesburg at City Deep mine along the Main Reef. In the background can be seen the Krugersdorp/Randfontein mines. The large break between mine dumps is indicative of the Witpoortjie fault-line. This image is indicative of the position of the reef and its richness in yield. The image dates from circa 1938. (**Haughton, 1940, opposite pp-118.**)



Fig. 10. Above. Looking east from above Johannesburg at Rose Deep mine along the Main Reef. In the background can be seen the Benoni, Brakpan and Springs mines. The large break between mine dumps is indicative of the Boksburg fault-line. This image is indicative of the position of the reef and its richness in yield. The image dates from circa 1938. (**Haughton, 1940, opposite pp-119.**)

Although the gold of the northern lying Zimbabwe Craton were *discovered* and utilised by African people more than a thousand years ago (*Phillipson, 2005*), the Central goldfields were only discovered in 1886³ after the Eerstegoud, Pilgrimsrest, Baberton and Magaliesberg alluvial fields were identified in the 1870³s. In this early quest for minerals the likes of Mauch, Merensky and Struben all played varying roles of importance.

The identification of the *Klerksdorp goldfields* is generally attributed to *A.P. Roos in 1886* on the farm Rietkuil and later on also on the *Klerksdorp Town Lands*. (*Scott, 1953*.) Soon after this *Simon Fraser*⁴, one of the gold mining pioneers of the 1880^s pegged out his claim on the farm Witkoppen where Orkney is located at present. This discovery led to lively prospecting in the area and in 1895 there was already seventeen companies registered as gold-mining syndicates on the Klerksdorp goldfields. (*Haughton, 1940, pp-171*)

Soon the area developed into a place of varying successes as the available ore bodies varied greatly in yield. Apparently it was only the *Afrikander Mine*⁵ that was able to produce with some form of stability. According to *Haughton* the first documented production quantity of the *Klerksdorp fields* was noted in 1890 as being 6 790 *fine-ounces* of gold.

With the intervention of the Second South African War (1899-1902) and the First World War (1914 – 1918) the areas production fell to a mere 144 *fine-ounces* in 1920. This may also be partially be ascribed to the pyritic nature of the ore that originally hampered the extraction of the precious metal limiting the yield of this specific gold field.



By 1933 the gold price had risen sharply and technology had advanced so that gold extraction was more dependable. In that year the Klerksdorp gold field's production had risen to 15 000 *fine-ounces*, and in 1938 it was estimated to be approximately 1 064 000 *fine-ounces*. *Haughton* explains that the sharp rise in production could be ascribed to the fact that in 1935 there was only three large mines operating on the fields, while in 1938 there were already eight mines operating in different states of development and production. The last of these to start producing before the Second World War was the *Western Reefs Gold Mine*.

Fig. 11. Above. The Buffelsdoorn Company was floated in 1899 with 550 000 shares priced at 1£ each. This is a typical share certificate from the period. Note that it is printed in English and Portuguese. (*Numismatic society*.)

These eight mines were situated to the east and southeast of Klerksdorp⁶, to the west on the farms Rietkuil, Elandslaagte and Rhenosterspruit and to the northeast of Klerksdorp on the farms Buffelsdoorn and Eleazer. (*Haughton, 1940, pp-172 to175*.)

³ The first recorded discovery of gold on the Witwatersrand was made by Jan Gerrit Bantjes in June 1884, on the farm Vogelstruisfontein, and was followed soon thereafter, in September, by the Struben brothers who uncovered the Confidence Reef on the farm Wilgespruit, near present-day Roodepoort. However, these were minor reefs, and today it is the general consensus that credit for the discovery of the main gold reef must be attributed to George Harrison, whose findings on the farm Langlaagte were made in July 1886, either through accident or systematic prospecting.

⁴ Simon Fraser was born on the Orkney Isles off the north coast of Scotland.

⁵ The location of this mine could not be determined by the author.

⁶ Farm names not mentioned by Haughton but from his other descriptions of the ore bodies one can cautiously presume that it is the older claim driven mining areas on the Klerksdorp town lands, the farm Nooitgedacht the farm Stilfontein and the farm Witkop(pen) . Witkoppen is where the Western Reefs Gold Mine was located.



Fig. 12. Above on the *Jeppie 1899 Map of the Transvaal* the author has superimposed data retrieved from *Haughton, (1940, pp-172 to175)* showing the distribution of the mines circa 1940. *Rhenoesterspruit* was the location of the *Dominion Mine*, *Rietkuil* was the location of the *Babrosco Mine*, *Eleazar* was the location of the *Machavie Mine*, *Buffelsdoorn* was the location of the *Buffelsdoorn Mine* and *Witkoppes* was the location of the *Western Reefs Gold Mine*.

7.2. The Vegetation of the Region.

The study site corresponds mainly to the Grassland Biome and to a lesser extent to the Savannah Biome as defined by (*Mucina & Rutherford, 2006, p-33.*) These authorities further define the area in three smaller Bioregions, more particularly to the Vredefort Dome Granite Grassland Bioregion, the Klerksdorp Thornveld Bioregion and the Western Highveld Sandy Grassland Bioregion (*Mucina & Rutherford (2006 pp-385 to 388).*)

For a more lucid description of this recent and complicated work of *Mucina & Rutherford* we revert to the less formal definitions of Acocks's Veld Types of South Africa which conforms to the *Mucina & Rutherford* model.

7.2.1. Pure Grass-veld Types.: According to *Acocks (1988, pp-100)* these types occur on the central upper plateau of Southern Africa. It appears on levels of between 1000 and 3000 meters above sea level where lower precipitation and severe cold and frost prevent the establishment of trees and forests. It is only rocky hills and ridges, which are rare on plains, and along the drainage lines of rivulets and rivers that allows the occurrence of some shrubs and trees. Acocks allows that even though he identifies several different veld types (48-60) that it is difficult to distinguish between them as the differences are based on the difference of proportions in which a small number of species compete to dominate.

7.2.1.1. *Cymbopogon-Themedea* veld type 48: Apparently, together with veld-type 56 this is the veld of the sandy parts of the wetter higher-lying portion of the highveld in the north-eastern Cape, Orange Free State and south-central Transvaal, undulating to flat country.

Altitude ranges from 1350 to 2000 meter above sea level and a summer rainfall range between 450 and 750 mm per year. Winters are severely frosty and under such conditions a mixed to sour grassveld is the climax. Much of this veld has been ploughed over time and the sandy soil is in a state of separation. *Acocks (1988, pp-101)* divides this type into a *southern* and *northern* variety. The latter being the one applicable in the case of Klerksdorp/Orkney. The difference between the two variants is based on (amongst others) his counts of the two species *themeda triandra* and *setaria flabellate* where the first dominates in the southern variation and *setaria* in the northern variation. For full specie definitions see *Acocks (1988, pp- 101)* and *Mucina & Rutherford (2006 pp-385 to 388)*.



Fig. 13. Above. Klerksdorp (Orkney) is located on the intersection of three different veldt type zones as illustrated above. (*Acocks map, Veldt Types of Southern Africa, 1988.*)

7.2.1.2. Dry Cymbopogon-Themeda veld type 50: This type lies to the west and south of the *Cymbopogon-Themeda* type, the main difference being that it is drier and is situated at a lower altitude. Four variants are defined by *Acocks (1988, pp0103)* of which the northern variant is appropriate in this case. It is a rather fluid type, merging upwards into the *Cymbopogon-Themeda* veld and south-eastwards and south-westwards into a combination of bushveld and Kalahari Thornveld. Stunted shrubs are scattered over the veld being mainly *grevia flava* and *diospyros pallens* and bush on rocky outcrops.

7.2.2. False Grass-veld Types.

Bankenveld type 61. According to *Acocks (1988, pp-112)* it is possible that this veld type once was an open savannah of acacia caffra. He maintains that in some places this is still the case and that it survives along its northern border and that sour bushveld regularly occur on rocky outcrops and hills. *Acocks* says that type 61 is extremely sour, sparse and tall tufted type with forbs that plays an important role. According to *Acocks* veldt type 61 consist of three variations, the (a) Western, (b) Central and (c) Eastern categories. In Klerksdorp/Orkney's case it is Type 61a that concerns us. There is again little to distinguish it in the form of trees, but *eragrostis racemosa* and *digitaria tricholaenoides* are now dominant grass species

The greatest impact that this vegetative composition had on the development of the gold fields was that there was no wood available for either shelter, construction work, heating or food preparation. This resulted in the transport of wood from other parts of the region, the planting of millions of trees and the discovery and development of the regional coal fields.

8. Archaeological and Historical Background.

As is commonly known this north and central region of South Africa is richly endowed with both archaeological as well as historical resources. To provide a full record of this data may entail many hundreds of pages of information. So, as for brevity, only the main aspects of the heritage estate of the region will be included below. This potential large body of information is therefore truncated so as to provide a realistic sounding board for the present investigation for the proposed revival of the seven mining shafts and associated premises by CAPM Gold at Orkney, Northwest Province.

8.1. Stone Age.

8.1.1. The Early Stone Age.

The Early Stone Age is presented in the general region by two locations within a hundred kilometre range. The first and possibly the best known is the *Cradle of Humankind* site situated some 150 kilometres to the northeast at Magaliesburg/Krugerdsorp that is in no need of elucidation. The *Cradle of Humankind* contains deposits in limestone cavities that shows the presence of *Australopithecus Africanus* in the region over 1,5 million years ago, and a continuous occupation of early hominines. These sites are world renowned and have been, and still are, being researched by the Wits department of palaeontology. (Deacon, 1999.)

Secondly the extensive *Three Rivers Complex* site located some 120 kilometres to the east at Vereeniging was excavated and described by a number of researchers starting with van Riet Low in 1937. (Deacon, 1999 and Sampson, 1974.)

(Regarding the site under investigation no Early Stone Age artefacts or shelters were observed. One may disregard that a significant site from this period will be encountered in the investigation area)

8.1.2. The Later Stone Age.

The Later Stone Age, although not represented by long term occupation sites is also well represented in the area by a number of engraving sites along the Vaal River. In *recent* times it appears as if hunter-gatherers avoided the region for long term occupation, possibly owing to environmental conditions that required regional and seasonal visitation to the highveld.

Three engraving sites located at Redan, Vereeniging and at Driekopseiland indicate long term use of the area as religious centres by later Stone Age peoples. (Deacon, 1999)

(Regarding the site under investigation no Later Stone Age artefacts shelters or rock art was observed during the investigation. One may disregard the fact that a significant site from this period will be encountered in the investigation area)

8.2. Iron Age.

8.2.1. The Early Iron Age.

Of the rarest archaeological remains in Southern Africa is represented from this period that is hedged in time between 300 A.D. and 900 A.D. It represents the first occupation of Agro-pastoralists of Southern Africa that migrated south from the Chad area from 400 B.C. onwards. There are no known sites from this period in the direct region as they are mainly located in the Limpopo and KwaZulu–Natal provinces of South Africa. (Phillipson, 2005.)

(Regarding the site under investigation no indications of Early Iron Age remains were identified. One may disregard the fact that a significant site from this period will be encountered in the investigation area)

8.2.2. The Middle Iron Age.

These sites are mainly associated with the *Mapungubwe Period* that is generally associated with the area north of the Zoutpansberg. (Van Rooyen, R. (Ed) Frazer, S. (Ed) Tiley, S.,

2004). In regards to the region under investigation the Melville Koppies site in Johannesburg and the Schoemansville site excavated by Mason in the 1980's shows at least a nominal presence of Iron Age peoples in the general region during this period. (*Mason, 1969.*)

(Regarding the site under investigation no evidence of Middle Iron Age sites were identified. One may disregard the fact that a significant site from this period will be encountered in the investigation area.)

8.2.3. The Later Iron Age.

This period and its associated sites are associated with demise of the African-Indian trade after 1500 A.D, and the advent of European influence on the East Coast since the circumnavigation of the Cape of Good Hope by Da Gama and Diaz. (*Axelson, E., 1969.*)

It can also be tentatively linked to the impact of foreign agricultural products from the Americas, especially maize. It also represents the expansion of Agro-pastoralists societies in Southern Africa, and an increase in occupation of land that was possibly to a large extent determined by environmental factors and civil wars.

In the specific research area this period is especially represented by the general occupation of the culture generally known as the *Goya*. Even though literally hundreds of these sites are evident in the general area of the South African highveld little is known of these occupations in the official archaeological data basis. *Maggs, 1976* in his *Iron Age Communities of the Southern Highveld* describes the variations in occupation. To the north and northeast in the Marico and Magaliesberg regions there is also ample record of Tshwane, Sotho and Ndebele occupation. Some of the remnants are described by Moffat in *Wallis, 1976.*

During a second phase mitigation study *Peltzer* compiled a description of later Iron Age settlement in the Vredefort dome area at *Askoppies* that shows the extent of these cultures in the general area.

(Regarding the site under investigation no evidence of Later Iron sites were identified. One may disregard the fact that a significant site from this period will be encountered in the investigation area.)

8.3. Historical Period.

8.3.1. General.

After the decree of the demolition of slavery in the 1830's world-wide, there was an ex-flux of European farmers from the Cape into the interior of Southern Africa. (*De Kock, 1950.*) These people reached the *Transvaal* after 1836, and *Klerksdorp, Potchefstroom, Ohrigstad Soutpansberg* and *Lydenburg* became the focal points of re-settlement of this group between 1838 and 1848. (*Potgieter, 1959.*) The eventual establishment of the *Zuid Afrikaanse Republiek* that was to be separated from the British Government after the *Sand River Convention* became the basis of a continuous dispute over land occupation between Europeans and locals (*Mönnig, 1978*) that lasted into the modern era.

Although it is generally accepted that Potchefstroom was the first European town in the Transvaal a small group of trekkers under magistrate Jacob de Clercq did in fact first settle along the Schoonspruit in a pattern referred to as a *ry-dorp*. This practice afforded that a communal water furrow serviced a number of small plots where people could build dwellings and live together for safety purposes. In *figure 12* on the Jeppe 1899 Map of the Transvaal this first settlement can be clearly seen marked the town lands to the west of the Schoonspruit.

(Regarding the site under investigation no evidence of historical occupation exists on the site.)

8.3.2. Klerksdorp and Orkney specific.

Klerksdorp originated in the late 1830s when the first Voortrekkers settled on the banks of the Schoonspruit (*clear stream*) which flows through the present town. Prominent among the first settlers was C M du Plooy who appropriated a farm of some 16 000 ha and called it Elandsheuwel (*hill of the eland*). (See figure 12, of the *Jeppe's 1899 Map of the Transvaal that shows the remnants of Elandsheuwel*.)

Other trekkers joined him there and, in exchange for help with the construction of a dam and irrigation canal were granted portions of the farm as well as communal grazing rights on the rest of the land. This collection of smallholdings was later given the name of Klerksdorp in honor of the first Landrost (*magistrate*) of the area, Jacob de Clercq. It was located on the west bank of the Schoonspruit in the centre of the present Klerksdorp.

The tranquility of this rural paradise was shattered in August 1886 when A P Roos discovered gold on the farm Rietkuil (*pool of reeds*) and on the village's commonage. In the same year, what turned out to be the world's richest gold reef was discovered on the Witwatersrand about 160 km to the east. The world was in the grip of gold fever and the inevitable rush hit Klerksdorp as well. The 4 000 would be diggers who descended on the village were asked to draw lots for mining rights on public land.

A shanty town sprang up virtually overnight on the east bank of Schoonspruit and within three years of the first discovery the *new town* boasted about 70 taverns and a stock exchange of its own. Before the actual exchange was put up, *high change* was called at the *Exchange Hotel*. The diggers of Klerksdorp soon made the same sad discovery as those on the Witwatersrand : - the gold was there but it demanded expensive and sophisticated equipment to recover. This lively prospecting in the area affected much excitement and in 1895 there was already seventeen companies registered as gold-mining syndicates on the Klerksdorp goldfields. (*Haughton, 1940, pp-171.*) One by one these early Klerksdorp mining companies folded.

The railway from Krugersdorp reached Klerksdorp on the 3rd of August 1897 and the one from Kimberley closed the circuit in 1906.

It was possibly the establishment of the *Western Reefs Gold Mine*, the latter being attributed to Anglo American Corporation research and exploration and eventual implementation, which initiated the Orkney and Stilfontein gold mine fields utilization.

In 1888 whilst working on the Strath-vaal farm just outside Klerksdorp, Charles Scott (senior) discovered an outcropping gold reef which he then developed, the reef became known as Strathmore reef. Scott (senior) believed that the area to the east of Klerksdorp also contained a subterranean reef and it was his son, also named Jack Scott, who proved his theory true. It took Jack (junior) years of prospecting, from 1933 to 1939 until the Second World War broke out. Jack (junior) searched the Klerksdorp area to no avail, but in 1945 he obtained options over the farm Stilfontein and portions of adjoining farms where his exploration would come to an end. In 1947 the first borehole was sunk and at a depth of 2637 feet they intersected the Reef. In May 1949 two shafts (Charles and Margaret) were sunk and it was this success at Stilfontein that inspired the opening up of the Hartebeesfontein and Buffelsfontein mines

Today Klerksdorp incorporates the towns of *Orkney, Kanana, Stilfontein, Khuma, Hartebeesfontein* and *Tigane* giving it a population of more than 350,000 inhabitants (*Census Statistics South Africa 2001*). Klerksdorp is also fondly known as *Matlosane*. It is at present the rather wobbly hub of the gold and uranium mining industry of the Far West Rand.

In 1939, legendary golf club architect Bob Grimsdell was commissioned to build a nine-hole golf course in Orkney. His fee was one hundred pounds. The wooden log cabin style clubhouse was built from Oregon pine crates which winding hoist parts had been shipped in from overseas for the Western Reefs mine in Orkney. The course was officially opened in 1939 by Ernest Oppenheimer, the Chairman of the Anglo American Corporation.

The seven (7) shafts that constitute CAPM Orkney Gold, initially formed part of the Anglo American Vaal Reef Operation and were named No.'s 1 to 7 shafts. (The order of the numbering apparently bears no relationship of the order in which they were developed.) The ownership of the shafts then changed in time to African Rainbow Minerals (Pty) Ltd. (ARM gold) and consisted of ARM gold 1 (# 1, # 2 and # 5 shaft) and ARM gold 2 (# 3, # 4, # 6 and # 7 shaft).

In October 2003, ARM gold merged with Harmony Gold and the mines name changed to the Harmony Orkney Operation No.1 to No.7 shafts. Pamodzi Gold bought the operations from Harmony Gold in March of 2008, however Pamodzi was provisionally liquidated in March of 2009 and final liquidation was granted in October 2009. In late 2009, Aurora Empowerment Systems took over management of the Orkney Operations. The operations remained dormant until 2011, when Pamodzi Gold entered into a sales agreement with CAPM Gold in August 2011. The sales agreement with CAPM included the full acquisition of all assets of the Orkney Gold Mine (Shaft # 1 to # 7.)

9. The documentation data of the seven shafts and premises under investigation.

Site #1.



Fig. 14. Above is the site map of the #1 shaft and its associated infrastructure. (Google Earth image (2014) with the investigation area outlined in red.⁷)



Fig. 15. Above is the site map of the #1 shaft and its associated infrastructure showing the on-foot route used during the site investigation. Investigation route is outlined in yellow. (Google Earth image 2014)

⁷ For a complete list of the official buildings and infrastructure under investigation see the 2015 Environmental Impact Assessment compiled by Shangoni Management Services.)



Figs. 16 to 17. Above are typical buildings and structures on site of #1 shaft. All date from circa 1960 and onwards. The entire infrastructure on this site is to be retained and re-used. (Photographs, S.M. Miller 2015.)



Figs. 18 to 19. Above are typical buildings and machinery on site of #1 shaft. All date from circa 1960 and onwards. The entire infrastructure is to be retained and re-used. (Photographs, S.M. Miller 2015.)



Fig. 20. Left is the concrete headgear structure of #1 shaft. The presence of a concrete headgear such as this one normally indicates modern technology and origin period post 1950⁸. (Photograph, S.M. Miller 2015.)

⁸ **Note on concrete headgear constructions.** Stilfontein mine: - 1947 the first borehole was sunk and at a depth of 2637 feet they intersected the Reef. In May 1949 two shafts (Charles and Margaret) were sunk and it was this success at Stilfontein that inspired the opening up of the Hartebeesfontein and Buffelsfontein mines. The Margaret shaft at the Stilfontein mine was the first concrete headgear ever to be erected in South Africa and was designed locally and completely constructed from local materials. Tower-mounted on the Margaret shaft concrete headgear was the first ever multi rope Koepoe hoist in South Africa.



Figs. 21 to 23. Above are typical rails, coco-pans, rope wheels and structures on site of #1 shaft. All of the infrastructure is to be retained, upgraded to modern safety regulations and re-used. (Photographs, S.M. Miller 2015.)

Site #2.



Fig. 24. Above is the site map of the #2 shaft and its associated infrastructure. (Google Earth image (2014) with the investigation area outlined in red.⁹)

⁹ For a complete list of the official buildings and infrastructure under investigation see the 2015 Environmental Impact Assessment compiled by Shangoni Management Services.)



Fig. 25. Above is the site map of the #2 shaft and its associated infrastructure showing the on-foot route used during the site investigation. Investigation route is outlined in yellow. (Google Earth image 2014)¹⁰



Figs. 26 to 27. Above are typical buildings and structures on site of #2 shaft. All date from circa 1960 and onwards. All of the infrastructure on this site is to be retained and re-used. (Photographs, S.M. Miller 2015.)



Figs. 28 to 29. Left are typical buildings and structures on site of #2 shaft. All date from circa 1960 and onwards. The entire infrastructure on this site is to be retained and re-used. (Photographs, S.M. Miller 2015.)

¹⁰ The compound site was not visited as it probably dates post 1960 and CAPM Gold intends to retain it as an accommodation facility, either for its own use or for rental to the public.



Fig. 30. Left is the concrete headgear structure of #2 shaft. The presence of a concrete headgear such as this one normally indicates modern technology and origin period post 1950⁸. (Photograph, S.M. Miller 2015.)

Site #3.



Fig. 31. Above is the site map of the #3 shaft and its associated infrastructure. (Google Earth image (2014) and the investigation area is outlined in red.) (For full list of official buildings and infrastructure see appendix in the 2015 E.I.A complied by Shangoni Management Services.)



Fig. 32. Above is the site map of the #3 shaft and its associated infrastructure showing the on-foot investigation route used. Investigation route is outlined in yellow. (Google Earth image 2014)



Figs. 33 to 36. Top and left are general views of the demolished site buildings and structures on site of #3 shaft. Only nominal buildings remain at the entrance to the site. The steel and iron headgear had been removed and the shaft had been plugged for safety. From the photographs supplied by CAPM Gold it appears as if the buildings and structures on this site may have been protected resources under the National Heritage Act. It does not appear as if a demolition permit was obtained for the site. (Photographs, S.M. Miller 2015.)



Figs. 37 to 41. Top are general views of the demolished site buildings and structures on site of #3 shaft supplied by CAPM Gold. As no other images are available it is difficult to determine the heritage status of the site in general. The iron headgear appears to be a protected structure. (Photographs, CAPM Gold)



Fig. 42. Above is the site map of the #3 shaft and its associated infrastructure. (Google Earth image 2009.) From this image it is clear that the site is still intact. Note that a large portion of the compound visible here is absent in **figure 32** in 2014. ¹¹



Fig. 43. Above is the site map of the #3 shaft and its associated infrastructure. (Google Earth image 2011.) From this image it is clear that the site is still intact. Note that a large portion of the compound visible here is absent in **figure 32**. From the information in **figures 32, 42 and 43** it appears that the demolition took place between 2011 and 2015. ¹²

¹¹ Compound does not belong to CAPM but belongs to Anglo Gold Ashanti

¹² The Section 11 application was submitted in August 2011 however CAPM Gold legally took onweship of the properties (and related assets) in June 2014.

Site #4.



Fig. 44. Above is the site map of the #4 shaft and its associated infrastructure. (Google Earth image (2014) and the investigation area is outlined in red.)(For full list of official buildings and infrastructure see appendix in the 2015 E.I.A complied by Shangoni Management Services.)



Fig. 45. Above is the site map of the #4 shaft and its associated infrastructure showing the on-foot route used during the site investigation. Investigation route is outlined in yellow. (Google Earth image 2014)¹³

¹³ The compound site was not visited as it probably dates post 1960 and CAPM Gold intends to retain it as an accommodation facility, either for its own use or for rental to the public.



Figs. 46 to 47. Above are typical buildings and structures on site of #4 shaft. All date from circa 1960 and onwards. The entire infrastructure on this site is to be retained and re-used. (Photographs, S.M. Miller 2015.)



Figs. 48 to 49. Above are typical buildings and structures on site of #4 shaft. All date from circa 1960 and onwards. The entire infrastructure on this site is to be retained and re-used. (Photographs, S.M. Miller 2015.)⁸

Site #5.



Fig. 50. Above is the site map of the #5 shaft and its associated infrastructure. (Google Earth image (2014) and the investigation area is outlined in red.)(For full list of official buildings and infrastructure see appendix in the 2015 E.I.A complied by Shangoni Management Services.)



Fig. 51. Above is the site map of the #5 shaft and its associated infrastructure showing the on-foot route used during the site investigation. Investigation route is outlined in yellow. (Google Earth image 2014)¹⁴

¹⁴ The compound site was not visited as it probably dates post 1960 and CAPM Gold intends to retain it as an accommodation facility, either for its own use or for rental to the public.



Fig. 52. Left is the concrete headgear structure of #5 shaft. The presence of a concrete headgear such as this one normally indicates modern technology and origin period post 1950⁸. Apart from this lone structure nothing remains from the original infrastructure of the site. (Photograph, S.M. Miller 2015.)



Fig. 53. Above is the site map of the #5 shaft and its associated infrastructure. (Google Earth image 2005.) From this image it is clear that portions of the site are still intact although demolition has already commenced.¹⁵ Compare to figure 50 dated 2014.

¹⁵ The Section 11 application was submitted in August 2011 however CAPM Gold legally took ownership of the properties (and related assets) in June 2014.



Fig. 54. Above is the site map of the #5 shaft and its associated infrastructure. (Google Earth image 2011.) From this image it is clear that the site has been completely demolished. Compare to figure 50 dated 2014. From figures 50, 53 and 54 it appears that the demolition took place before 2011.

Site #6.



Fig. 55. Above is the site map of the #6 shaft and its associated infrastructure. (Google Earth image (2014) and the investigation area is outlined in red.) (For full list of official buildings and infrastructure see appendix in the 2015 E.I.A complied by Shangoni Management Services.)



Fig. 56. Above is the site map of the #6 shaft and its associated infrastructure showing the on-foot route used during the site investigation. Investigation route is outlined in yellow. (Google Earth image 2014.)



Figs. 57 to 61. Above are typical buildings and structures on site of #6 shaft. All date from circa 1940 and onwards. The entire infrastructure on this site is to be retained and re-used. (Photographs, S.M. Miller 2015.)¹⁶

¹⁶ Steel head-frames are traditionally linked to deep-level mining and have been built since the mid nineteenth century. They were mostly used in South Africa before the advent of concrete head-frames circa 1950. All early diamond and gold mines in South Africa were furnished with these winding platforms. Upon mine closure and mine reclamation a steel head-frame is easier to demolish and have great value as scrap metal especially where long periods have elapsed since their erection. Seen in both South African and world context they are not rare structures.

Site #7.



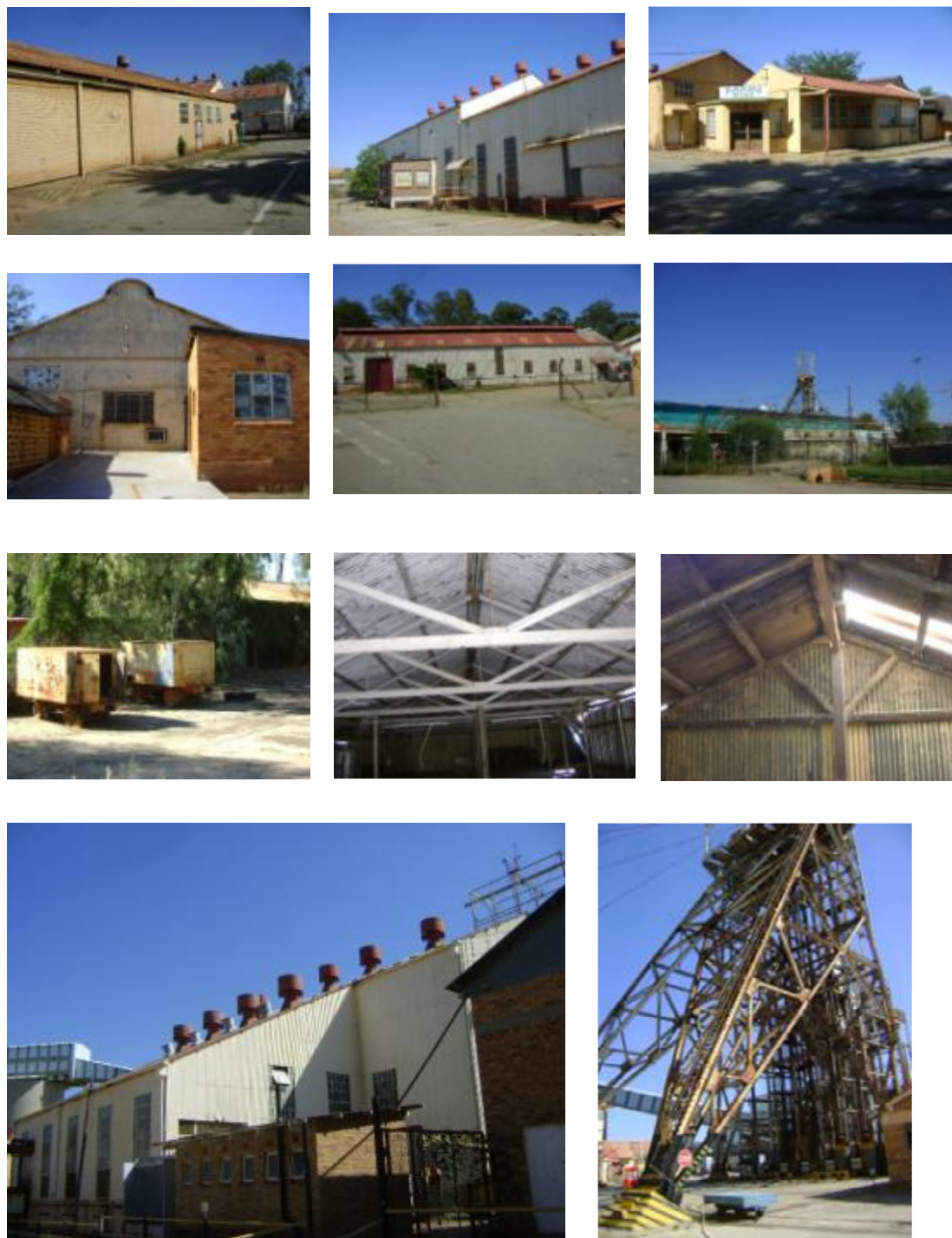
Fig. 62. Above is the site map of the #7 shaft and its associated infrastructure. (Google Earth image (2014) and the investigation area is outlined in red.)(For full list of official buildings and infrastructure see appendix in the 2015 E.I.A complied by Shangoni Management Services.)



Fig. 63. Above is the site map of the #7 shaft and its associated infrastructure showing the on-foot route used during the site investigation. Investigation route is outlined in yellow. (Google Earth image 2014.)



Figs. 64 to 81. Above are typical buildings and structures on site of #7 shaft in the area defined by a yellow lined rectangular in **figure 62**. All date from circa 1940 and onwards and are protected by the National Heritage Act. It is the intent of CAPM Gold to apply for demolition permits as these buildings are superfluous to mining objectives. It is provisionally foreseen that the three larger steel framed workshops will be earmarked for relocation when suitable clients can be obtained. (**Photographs, S.M. Miller 2015.**)



Figs. 82 to 92. Above are typical buildings and structures on site of #7 shaft outside the area defined by a yellow lined rectangular in **figure 62**. All date from circa 1940 and onwards and are protected by the National Heritage Act. It is the intent of CAPM Gold to retain these buildings as they are pivotal to mining objectives. (Photographs, S.M. Miller 2015.)¹⁶

Site 8. Office complex.



Fig. 93. Above is the site map of the office complex in Orkney and its associated infrastructure. (Google Earth image (2014) and the investigation area is outlined in red.)(For full list of official buildings and infrastructure see appendix in the 2015 E.I.A complied by Shangoni Management Services.)



Fig. 94. Above is the site map of the site offices in Orkney town and its associated infrastructure showing the on-foot route used during the site investigation. Investigation route is outlined in yellow. (Google Earth image 2014.)



Figs. 95 to 96. Above are typical buildings and structures on site of the Satellite Offices. All date from circa 1960 and onwards. The entire infrastructure on this site is to be retained and re-used. (Photographs, S.M. Miller 2015.)

10. Field Rating. (SAHRA minimum standards May 2007.)

No.	description	Rating according to minimum standards - May 07
1	# 1 shaft.	1. Not applicable as this site falls outside of the protection of the National Heritage Act. 2. Apart from the above it is part of the mining objectives of CAPM Gold to retain and maintain the complex for proposed operational procedures.
2	# 2 shaft.	1. Not applicable as this site falls outside of the protection of the National Heritage Act. 2. Apart from the above it is part of the mining objectives of CAPM Gold to retain and maintain the complex for proposed operational procedures.
3	# 3 shaft.	1. "General protection" A (Field Rating IV A): this site should be mitigated before destruction. (See section 38 of Act 25 of 1999.) 2. Apart from the above the site has been partially demolished by CAPM Gold without apparent second phase study and/or application for demolition permit as prescribed in section 38 of Act 25 of 1999.
4	# 4 shaft.	1. Not applicable as this site falls outside of the protection of the National Heritage Act. 2. Apart from the above it is part of the mining objectives of CAPM Gold to retain and maintain the complex for proposed operational procedures.
5	# 5 shaft.	1. Not applicable as this site falls outside of the protection of the National Heritage Act. 2. Apart from the above the site has already been demolished by the previous owners.
6	# 6 shaft.	1. "General protection" A (Field Rating IV A): this site should be mitigated before destruction. 2. Apart from the above it is part of the mining objectives of CAPM Gold to retain and maintain the complex as a whole for proposed operational procedures.
7	# 7 shaft.	1. "General protection" A (Field Rating IV A): this site should be mitigated before destruction. 2. Apart from the above it is part of the mining objectives of CAPM Gold to retain and maintain most the complex as a whole for proposed operational procedures. 3. If any buildings becomes superfluous it must either be maintained in proper order or CAPM Gold must apply for the demolition and or relocation of such buildings
8.	Office Complex	1. Not applicable as this site falls outside of the protection of the National Heritage Act. 2. Apart from the above it is part of the mining objectives of CAPM Gold to retain and maintain the complex for proposed operational procedures.

11. Statements of Significance. (SAHRA minimum standards May 2007.)

No.	description	Rating according to minimum standards may 2007
1	# 1 shaft.	Not applicable as the site is not protected by the National Heritage Act.
2	# 2 shaft.	Not applicable as the site is not protected by the National Heritage Act.
3	# 3 shaft.	a. Its importance in the community, or patterns of South African history. g. Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.
4	# 4 shaft.	Not applicable as the site is not protected by the National Heritage Act.
5	# 5 shaft.	Not applicable as the site is not protected by the National Heritage Act.
6	# 6 shaft.	a. Its importance in the community, or patterns of South African history. g. Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.
7	# 7 shaft.	a. Its importance in the community, or patterns of South African history. g. Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.
8	Office Complex	Not applicable as the site is not protected by the National Heritage Act.

12. Summary

12.1 Existing parameters.

12.1.1. In the first place there is a distinct difference between sites #3, #6, and #7 that is clearly linked to the first development group dating to late 1930 and the remaining sites #1, #2, #4 and #5 that were established post 1960.

Secondly it is also clear that all of these mines were continuously expanded, added-to and modernised according to mining safety regulations over time.

Finally, owing to the CAPM Gold mine financial policy, it is of utmost importance that the retention and ongoing maintenance of existing infrastructure is central to the viability of the proposed mining objectives.

12.1.2.

The detail referred to in the previous three paragraphs above is then reflected in the conditions recorded during the site investigation on the 9th of March 2015. Below is given the historical impacts as perceived based on mining objectives and the prescriptions of *Act 25 of 1999* also known as the *National Heritage Act*

Site #1. This site with modern concrete headgear is dated post 1960 and therefore falls outside of the protection of Act 25 of 1999. Even so the mining objectives states that all of the existing infrastructure will be retained apart from two office buildings that are superfluous to mining objectives. Whether these will be demolished or not has not yet been finalised.

No mitigation measures are necessary.

Site #2. This site with modern concrete headgear is dated post 1960 and therefore falls outside of the protection of Act 25 of 1999. Even so the mining objectives states that all of the existing infrastructure will be retained. This infrastructure includes a large compound or living quarters for labourers that will be maintained for the use of CAPM Gold either for its own labour or for rental to the public that may require accommodation.

No mitigation measures are necessary.

Site #3. This site with traditional riveted steel headgear is dated to the end of the 1930's. The whole of the site has been demolished apparently without a demolition permit. When this event occurred and on whose responsibility is not clear but Google Earth images suggests that it was an ongoing process from 2009 onwards culminating between 2011 and 2015. CAPM Gold has taken legal responsibility for the demolition of the steel headgear for the sale of the steel. *The site is protected by section 34 (1) of Act 25 of 1999, and is rated as "General protection" A (Field Rating IV A) by the SAHRA minimum standards May 2007, therefore cannot be altered or destructed without a demolition permit issued by the relevant heritage authorities.*

Mitigation is required to address this issue.

Site #4. This site with modern concrete headgear is dated post 1960 and therefore falls outside of the protection of Act 25 of 1999. Even so the mining objectives states that all of the existing infrastructure will be retained. This infrastructure includes a large compound or living quarters for labourers that will be maintained for the use of CAPM Gold either for its own labour or for rental to the public that may require accommodation.

No mitigation measures are necessary.

Site #5. This site with modern concrete headgear is dated post 1960 and therefore falls outside of the protection of Act 25 of 1999. The whole of the site has been demolished apparently without a heritage study compiled. When this event occurred is not clear but Google Earth images suggest that it was already mostly demolished by 2005 onwards. Mitigation is not required to address this issue. The remaining infrastructure includes a large compound or living quarters for labourers that will be maintained for the use of CAPM Gold either for its own labour or for rental to the public that may require accommodation.

No mitigation measures are necessary.

Site #6. This site with traditional riveted steel headgear is dated to the mid 1930's. Even so it reflects alterations and updating over time. The whole of the site is still intact. The mining objectives of CAPM Gold states that the site will be retained as-is. It will be maintained in its present format allowing for and according to modern mining safety regulations.

No mitigation measures are necessary.

Site #7. This site with traditional riveted steel headgear is dated to the mid 1930's. It is possibly the most representative of the early period of mining in the region. Even so it reflects alterations and updating over time. Most of the site is still intact. The mining objectives of CAPM Gold states that the site will mainly be retained as-is. It will be maintained in its present format allowing for and according to modern mining safety regulations. All buildings on the site are protected by section 34(1) of the National Heritage Act, Act 25 of 1999. *These are all rated as "General protection" A (Field Rating IV A) by the SAHRA minimum standards May 2007, therefore cannot be altered or demolished without a demolition permit issued by the relevant heritage authorities.*

Mitigation will be required to address this issue if any building is found to be neglected and not properly maintained as was recorded in March 2015.

Site 8. This site comprises a whole block in Orkney and consists of offices that used to serve the larger mining companies in the past. The site clearly post-dates 1960 and therefore falls outside of the protection of Act 25 of 1999. Even so it will be maintained for the use of CAPM Gold either for its own personnel or for rental to the public that may require office space. Alternatively it can also be changed into a public facility such as a school, clinic or old-age accommodation facility.

No mitigation measures are necessary.

13. Recommendation.

13.1. It is recommended that the mining objectives of CAPM Gold are adhered to and that historical infrastructure is retained and maintained and reused in modern mining context. Structures are only to be altered if so required by modern mining safety regulations.

13.2. It is recommended that CAPM Gold may approach the heritage authorities to demolish any buildings found superfluous to their activities. The normal procedure of a second phase study must be followed and a demolition permit must be applied for and granted by the appropriate heritage authorities before the requested demolition proceeds.

13.3. It is recommended that CAPM Gold must comment on the demolition of site #3 and that this comment must be evaluated by the appropriate heritage authorities.

13.4. It is recommended that a Heritage Management plan is complied so that heritage resources can be monitored during periodical environmental auditing processes.

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Appendix 1: Declaration of Independence.

I, Sidney Mears Miller (ID 5412135029082) declare that:

- I act as an independent environmental practitioner in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting environmental impact assessments, including knowledge of the National Heritage Resources Act (No 25 of 1999) and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I will take into account, to the extent possible, the matters listed in regulation 8 of the regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- I will keep a register of all interested and affected parties that participated in a public participation process;
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not;
- all the particulars furnished by me in this form are true and correct;
- will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations;
- I realise that a false declaration is an offence in terms of regulation 71 and is punishable in terms of section 24F of the Act.

Disclosure of Vested Interest

I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity AND OR proceeding other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations,



SIDNEY MEARS MILLER

Appendix 2.

Cultural heritage risk assessment.

Environmental impact, extent, duration, significance and degree to which impact will cause irreplaceable loss.	Risk rating (before mitigation).	Environmental objective.	Degree to which impact can be reversed and the supporting mitigatory action plan.	Timeframe.	Responsibility.	Risk rating (after mitigation.)
ENVIRONMENTAL COMPONENT: Archaeological and Heritage.						
ACTIVITY: Revival of eight sites, seven being gold mining shafts and associated infrastructure (CAPM Gold, Orkney shafts known as #1 to #7 shafts) and a office complex.						
PROJECT PHASE APPLICABILITY	Commissioning	X				
	Operation	X				
	Closure					
<p>Site 1. #1 shaft. <u>Field rating:</u></p> <p>1. Not applicable as this site falls outside of the protection of the National Heritage Act.</p> <p>2. Apart from the above it is part of the mining objectives of CAPM Gold to retain and maintain the complex for proposed operational procedures.</p> <p><u>Statement of significance:</u> Not applicable as the site is not protected by the National Heritage Act.</p> <p><u>Impact description:</u> Proposed mining activities will have no</p>	No risk.	No objective for preservation as site will not be impacted on by proposed mining objectives.	<p><u>Degree to which impact can be reversed:</u> Not applicable.</p> <p><u>Mitigation:</u> Not applicable.</p>	Planning phase.	CAPM Gold.	No risk.

Environmental impact, extent, duration, significance and degree to which impact will cause irreplaceable loss.	Risk rating (before mitigation).	Environmental objective.	Degree to which impact can be reversed and the supporting mitigatory action plan.	Timeframe.	Responsibility.	Risk rating (after mitigation.)
<p>impact on the site as it is the mining objective of CAPM Gold to retain the site as is and employ it in its proposed activities.(See figures 14-23.)</p> <p><u>Degree to which impact will cause irreplaceable loss:</u> Not applicable.</p>						
<p>Site 2. #2 shaft.</p> <p><u>Field rating:</u></p> <p>1. Not applicable as this site falls outside of the protection of the National Heritage Act.</p> <p>2. Apart from the above it is part of the mining objectives of CAPM Gold to retain and maintain the complex for proposed operational procedures.</p> <p><u>Statement of significance:</u> Not applicable as the site is not protected by the National Heritage Act.</p> <p><u>Impact description:</u> New mining activities will have no</p> <p>impact on the site as it is the objective of CAPM Gold to retain the site as is and employ it in its proposed activities.(See figures 24-30)</p> <p><u>Degree to which impact will cause irreplaceable loss:</u> Not applicable.</p>	<p>No impact.</p>	<p>No objective for preservation as site will not be impacted on by proposed mining objectives.</p>	<p><u>Degree to which impact can be reversed:</u> Not applicable</p> <p><u>Mitigation:</u> Not applicable.</p>	<p>Planning phase.</p>	<p>CAPM Gold.</p>	<p>No risk.</p>

Environmental impact, extent, duration, significance and degree to which impact will cause irreplaceable loss.	Risk rating (before mitigation).	Environmental objective.	Degree to which impact can be reversed and the supporting mitigatory action plan.	Timeframe.	Responsibility.	Risk rating (after mitigation.)
<p>Site 3. #3 shaft.</p> <p><u>Field rating:</u> General Protection rating IV A according to the SAHRA Guidelines of Minimum standards for Archaeological and Paleontological Components of Impact Assessment 2007. It should be mitigated before destruction.</p> <p><u>Statement of significance:</u> (According to the SAHRA Guidelines of Minimum standards for Archaeological and Paleontological Components of Impact Assessment.)</p> <p>(1) a. Its importance in the pattern of South Africa’s history.</p> <p>(2) c. Its potential to yield information that will contribute to understanding of south Africa’s cultural history.</p> <p>(3) g. Its strong association with a particular cultural group.</p> <p><u>Impact description:</u> The site was demolished by CAPM Gold between 2011 and 2015.</p> <p><u>Degree to which impact will cause irreplaceable loss:</u> The site has been demolished and cannot be revived.</p>	<p>The Headgear was demolished by CAPM Gold without demolition permit.</p>	<p>Re-assess the actual impact and identify mitigation processes.</p>	<p><u>Degree to which impact can be reversed:</u> Impact cannot be reversed.</p> <p><u>Mitigation:</u> Heritage authorities must be approached to evaluate the impact and suggest mitigation procedure.</p>	<p>Planning phase.</p>	<p>1.CAPM Gold. 2.Shangoni Management services. 3.Heritage consultant. 4.Heritage Authorities.</p>	<p>Unknown at present.</p>

Environmental impact, extent, duration, significance and degree to which impact will cause irreplaceable loss.	Risk rating (before mitigation).	Environmental objective.	Degree to which impact can be reversed and the supporting mitigatory action plan.	Timeframe.	Responsibility.	Risk rating (after mitigation.)
<p>Site 4. #4 shaft <u>Field rating:</u></p> <p>1. Not applicable as this site falls outside of the protection of the National Heritage Act.</p> <p>2. Apart from the above it is part of the mining objectives of CAPM Gold to retain and maintain the complex for proposed operational procedures.</p> <p><u>Statement of significance:</u> Not applicable as the site is not protected by the National Heritage Act.</p> <p><u>Impact description:</u> New mining activities will have no impact on the site as it is the objective of CAPM Gold to retain the site as is and employ it in its proposed activities.(See figures 44-49)</p> <p><u>Degree to which impact will cause irreplaceable loss:</u> Not applicable.</p>	<p>No Impact.</p>	<p>No objective for preservation as the site will not be impacted on by proposed mining objectives.</p>	<p><u>Degree to which impact can be reversed:</u> No impact is expected. Impact can be prevented if objectives are implemented.</p> <p><u>Mitigation:</u> Not applicable.</p>	<p>Planning phase.</p>	<p>CAPM Gold.</p>	<p>No Impact.</p>

Environmental impact, extent, duration, significance and degree to which impact will cause irreplaceable loss.	Risk rating (before mitigation).	Environmental objective.	Degree to which impact can be reversed and the supporting mitigatory action plan.	Timeframe.	Responsibility.	Risk rating (after mitigation.)
<p>Site 5. #5 shaft <u>Field rating:</u></p> <p>1. Not applicable as this site falls outside of the protection of the National Heritage Act.</p> <p>2. Apart from the above it is part of the mining objectives of CAPM Gold to retain and maintain the complex for proposed operational procedures.</p> <p><u>Statement of significance:</u> Not applicable as the site is not protected by the National Heritage Act.</p> <p><u>Impact description:</u> New mining activities will have no impact on the site as it is the objective of CAPM Gold to retain the site as is and employ it in its proposed activities.(See figures 50-54)</p> <p><u>Degree to which impact will cause irreplaceable loss:</u> Not applicable.</p>	<p>No Impact</p>	<p>No objective for preservation as site will not be impacted on by proposed mining objectives.</p>	<p><u>Degree to which impact can be reversed:</u> No impact is expected. Impact can be prevented if objectives are implemented.</p> <p><u>Mitigation:</u> Not applicable.</p>	<p>Planning Phase.</p>	<p>CAPM Gold.</p>	<p>No Impact.</p>

Environmental impact, extent, duration, significance and degree to which impact will cause irreplaceable loss.	Risk rating (before mitigation).	Environmental objective.	Degree to which impact can be reversed and the supporting mitigatory action plan.	Timeframe.	Responsibility.	Risk rating (after mitigation.)
<p>Site 6. #6 shaft <u>Field rating:</u></p> <p>1. “General protection” A (Field Rating IV A): this site should be mitigated before destruction.</p> <p>2. Apart from the above it is part of the mining objectives of CAPM Gold to retain and maintain the complex as a whole for proposed operational procedures.</p> <p><u>Statement of significance:</u></p> <p>a. Its importance in the community, or patterns of South African history.</p> <p>g. Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons. See figures 55-61)</p> <p><u>Degree to which impact will cause irreplaceable loss:</u> Not applicable.</p>	<p>No Impact.</p>	<p>No objective for preservation as site will not be impacted on by proposed mining</p>	<p><u>Degree to which impact can be reversed:</u> No impact is expected. Impact can be prevented if objectives are implemented.</p> <p><u>Mitigation:</u> Not applicable.</p>	<p>Planning Phase.</p>	<p>CAPM Gold.</p>	<p>No Risk.</p>

Environmental impact, extent, duration, significance and degree to which impact will cause irreplaceable loss.	Risk rating (before mitigation).	Environmental objective.	Degree to which impact can be reversed and the supporting mitigatory action plan.	Timeframe.	Responsibility.	Risk rating (after mitigation.)
<p>Site 7. #7 shaft <u>Field rating:</u></p> <p>1. “General protection” A (Field Rating IV A): this site should be mitigated before destruction.</p> <p>2. Apart from the above it is part of the mining objectives of CAPM Gold to retain and maintain most of the complex for proposed operational procedures.</p> <p><u>Statement of significance:</u></p> <p>a. Its importance in the community, or patterns of South African history.</p> <p>g. Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons.</p> <p><u>Degree to which impact will cause irreplaceable loss:</u> If mitigated loss will be minimal as important structures are proposed to be relocated</p>	<p>Medium</p>	<p>Alteration and / or demolition must be mitigated as prescribed by the National Heritage Act, Act 25 of 1999.</p>	<p><u>Degree to which impact can be reversed:</u> Impact can be mitigated according to National Heritage Act, Act 25 of 1999.</p> <p><u>Mitigation:</u> Proposed impact must be mitigated by application for demolition permit/s</p>	<p>Planning Phase.</p>	<p>1.CAPM Gold. 2.Shangoni Management services. 3.Heritage consultant. 4.Heritage Authorities.</p>	<p>No Risk if proper procedures are applied and demolition permits are obtained</p>
<p>Site 8. Office buildings. <u>Field rating:</u></p>	<p>No Impact</p>	<p>No objective for preservation as site will not be</p>	<p><u>Degree to which impact can be reversed:</u> No impact is expected. Impact can be prevented if objectives are implemented.</p>			

Environmental impact, extent, duration, significance and degree to which impact will cause irreplaceable loss.	Risk rating (before mitigation).	Environmental objective.	Degree to which impact can be reversed and the supporting mitigatory action plan.	Timeframe.	Responsibility.	Risk rating (after mitigation.)
<p>1. Not applicable as this site falls outside of the protection of the National Heritage Act.</p> <p>2. Apart from the above it is part of the mining objectives of CAPM Gold to retain and maintain the complex for proposed operational procedures.</p> <p><u>Statement of significance:</u> Not applicable as the site is not protected by the National Heritage Act.</p> <p><u>Impact description:</u> New mining activities will have no impact on the site as it is the objective of CAPM Gold to retain the site as is and employ it in its proposed activities.(See figures 50-54)</p> <p><u>Degree to which impact will cause irreplaceable loss:</u> Not applicable.</p>		impacted on by proposed mining objectives.	<u>Mitigation:</u> Not applicable.	Planning Phase.	CAPM Gold.	No Impact.

