A.C.A. HOWE INTERNATIONAL
Mining and Geological Consultants

COMPETENT PERSON'S REPORT ON THE GRAVELOTTE EMERALD MINE IN SOUTH AFRICA

for

URA HOLDINGS PLC

by

ACA HOWE INTERNATIONAL LIMITED

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1. SUMMARY

ACA Howe International Limited (ACA Howe) was commissioned by URA Holdings Plc (URA) to carry out a Competent Persons Report (CPR) written in compliance with the JORC Code (2012) on the Gravelotte Emerald Mine (GEM or the Property). The CPR was prepared in accordance with the relevant rules and guidelines issued by the Financial Conduct Authority (FCA) and the European Securities and Markets Authority (ESMA). In addition, the CPR conforms to the guidelines dictated by the JORC Code (2012).

The GEM emerald mine is located in Limpopo Province in north eastern South Africa. The Property was visited by the Competent Person, Roy Spencer, from 29th May to 3rd June 2022. Roy Spencer also has significant previous experience working at GEM, having overseen exploration and the planned restart of the mine for Magnum Mining and Exploration Limited (Magnum) from 2014 to 2016.

URA is the 100% owner of GEM Venus Holdings (Pty) Limited, which is the holder of 74% of the issued shares of the permit owner Adit Mining Consultants & Trading Pty Ltd (Adit Mining). The remaining 26% of the shares in Adit Mining are owned by N.C. Mlambo (2%), J.M. Maswanganyi (4%), Gravelotte Community Trust (5%) and Gravelotte Mine Employee Trust (15%). Adit Mining is the owner of a Mining Right which is valid until 23rd July 2033.

The GEM (or Cobra) mine has been in existence since 1929 when emeralds were first discovered in the Germania Hills, close to the village of Gravelotte in north eastern South Africa, some 50 km west of the Kruger National Park.

Several companies have explored for and mined emeralds at several locations before and after World War II in the Gravelotte area. In January 1956, the Cobra mine was reopened under the ownership of the African Gem Company of Johannesburg. Gravelotte Emeralds (Pty) Ltd (GEPL) (incorporated in 1957) and the Cobra and Discovery open pits were developed from 1963 onwards. In 1972, Promogem S.A. acquired GEPL and operated its mines until 1982. In 1973, the BVB and other outlying emerald properties scattered over a 12 kilometre long area, were consolidated into Promogem S.A. Underground development at Cobra Hill started in 1978 and stopped in March 1982. GEPL was then sold to Altina, and subsequently to Envox, then to Royex Sturgex and eventually to Cobra Emerald Mines Ltd, which was incorporated in May 1983.

Production at GEM ceased in 1986 as a result of the then management's inability to secure the southern extension of the ore body onto the adjoining Discovery Hill. Until 1982, the immediate Gravelotte area, dominated by the GEM mine, had produced in excess of 22.5 million grams (22,500 tonnes) of emeralds. Between 1982 and the cessation of production in 1986, the mine is estimated to have produced a further 1000 kg of emerald concentrate.

Production at GEM has largely been from the two linear open pits, the north easterly trending Cobra Pit (the bulk of production) and the adjacent Discovery Pit with an east-west strike.

Cobra Pit has been developed on the flanks of Cobra Hill (part of the Germania complex), over a vertical distance of at least 110 metres, with the current base of the pit at about 550 to 560 m asl. Discovery Pit has been developed over a vertical distance of approximately 60-65 metres.

It is important to note that the emerald-bearing schist packages at both pits are open in both strike directions and continue for at least 60 metres below the deepest mined level at Cobra and for at least 50 metres below the deepest mined emerald-bearing schist at Discovery.

Cobra North's Main Reef is a very steep to vertical emerald-bearing schist zone trending just east of north, generally up to 35 metres and exceptionally up to 80 metres in horizontal width in the northern part of the zone. The Main Reef mineralisation extends over at least 650 m with a vertical extent of 145 metres as indicated by open pit and underground adit mining and drilling results. Its gross morphology is as a schist zone enclosed between walls of massive granite. However, it is possible that the Eastern Bounding Granite may not extend past 800N.

In the far east of the Cobra pit, quartz mica schists may exist in an area of poor outcrop near the boundary with Selati Game Reserve. The contact between with the Cobra MF metavolcanics and biotite schists may exist in the area as well.

The Discovery zone lies southeast of Cobra, striking just south of east. Mined horizontal widths of emerald-bearing schist range from 5 to 40 m (the latter unconfirmed by ACA Howe) over 330 metres of strike and over 145 metres vertically. Dips vary from+/- 70^{o} in the west to 40-50^{o} in the eastern part of the pit, all to the southwest.

A series of podiform pegmatoid, felsic and dioritic intrusives and quartz bodies occur largely within the hangingwall of the ore zone in the south of the pit. Very few massive granite bodies are exposed in the Discovery area, as is the case at Cobra, although granite was intersected at depth during the later gold mining activities in the mid 1980's. The Discovery emerald-bearing schist package is also open along strike both to the east and west and at depth as well.

To the far west of the pit, the Discovery zone appears to be bounded at surface by younger (Leydsdorp Formation?) quartz mica schists but a contact between these two units have not yet been identified on the ground.

The Discovery zone extends eastwards for at least 100 m to the Property boundary, and is open in this direction and at depth. A large amount of emerald exploration work was done prior to the closure as an emerald mine in 1985, including many core and non-core drill holes. Extensive deep core drilling for gold and gold mining took place from 1986 to 1989. It is probable that emerald mineralisation has been exposed underground in the Discovery gold mine below the western part of the pit but the extent to which the emerald potential of the underground gold workings has been assessed is unknown.

ACA Howe has had an association with the deposit dating back to 1983. At that time, a senior consultant with the company (J. Langlands) had access to the full set of historic mine records, though this full set is no longer available on the mine site.

Between 2013 and 2016, ACA Howe was commissioned by various previous owners of the Property to provide CPR's on the project. Three CPR's were compiled to JORC (2012) standards but were only completed in draft format as a result of financing difficulties with the commissioning groups. Mr. J Langlands and Mr A. Phillips, both of whom are experienced geologists and associate consultants with ACA Howe (and both very experienced in gemstone deposit evaluation), were responsible for these draft reports.

It has been established that prior to 2013, the majority of the historic data base for the mine had been removed from site, including several thousand metres of historic drill core. Little trace of the data base has been found and ACA Howe has had to rely on the previous CPR's and whatever historical data had been reviewed in the preparation of these reports. Significantly, J Langlands of ACA Howe supervised a programme of bulk sampling in 1983, providing confidence in the grade assigned to the Mineral Resource. Drilling by previous owners completed on cross sections at 10 m spacing, and surface mapping completed by SRK Consulting both show continuity of the emerald-bearing schist. This data was utilised in the creation of the geological model.

Roy Spencer, the author of this CPR, has also had a background with the deposits dating back to 2013, when as an officer of both L.P. Hill and subsequently Magnum and then consultant to Magnum, he assisted with the compilation of the remaining data base and then the commencement of exploration activities on the ground at GEM.

It is recognised that a major drawback with respect to the GEM deposit, is that the geology of the Property has been poorly understood by previous owners. This, and a lack of understanding of the ore-forming mechanisms that have acted to create the deposit, has significantly hindered the development of the deposit. Fortunately, the previous owners, Magnum, had started a programme of work at the mine site which included airborne geophysics, RC drilling, pitting and geochemistry, sampling and then the collation of the data still available which led to the digitisation of part of the surviving drill information by ACA Howe, and the creation of digital sections for part of the Cobra and Discovery pits. This work has gone some way (although there is still a way to go), to understanding the overall geology of the Property, including the recognition of what may be a significant, hitherto unrecognised, style of emerald and beryl mineralisation – the Micro Fracture Related style (MFR).

The MFR mineralisation is best known, at the moment, within the Discovery Pit, where continuous down hole mineralisation extends up to scores of metres both vertically, and laterally, extensive along strike for equally long distances. Little is known of the tenor of the MFR at this stage, but the further understanding of the MFR should be a high priority going forward.

ACA Howe has completed an extensive review of the existing data base at GEM and has estimated Inferred Mineral Resources at both Cobra and Discovery.

A geological model was created by implicit modelling in Leapfrog Geo. The basis for the model is the emerald-bearing schist identified by past workers at Cobra and Discovery. Interpretation of the emerald-bearing schist by past workers shown on historical cross sections developed by ACA Howe, was utilised and was added to by the Competent Person's own experience at GEM. Historical drill hole data including emerald/beryl grain counts, geological drill hole logging, as well as surface geological mapping by SRK Consulting were also used in the construction of the model. The geological model provided the volume of emerald-bearing schist and, as is common for coloured gemstone deposits, the grade was assigned based on production and bulk sample data.

The Mineral Resource Estimate is shown in the table below.

Inferred Mineral Resource estimate for the GEM emerald deposit					
Deposit Zone	**Category**	**Tonnage (Mt) Emerald-Bearing Schist***	**Grade (g/t)**	**Emerald Tonnes***	**Emerald Carats (Mct)***
Cobra	Inferred	1.2	6.4	3.9	19.4
Discovery	Inferred	0.7	5.7	1.9	9.6
Total	Inferred	1.9		5.8	29.0

*After applying 50% payability.

Notes: Mineral Resources effective6th December 2023

1. Mineral Resources were estimated using the definitions and guidelines of the JORC Code (2012).

2. Assigned grades are derived from limited historical production and bulk sampling.

3. Tonnages are derived from modelling of interpreted emerald-bearing schist based on historical drilling. A payability factor has been applied as acknowledgement that it has not been possible to model controls on mineralisation within the schist due to limited data.

4. Both the estimates for Cobra and Discovery have been depleted by an approximate tonnage based on historical information and limited historical records.

5. Inferred Mineral Resources have a large degree of uncertainty as to their existence and whether they can be mined economically. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

6. The quantity and grade of reported Inferred Mineral Resources in this estimation are uncertain in nature and there has been insufficient exploration to define these Inferred Mineral Resources as an Indicated or Measured Mineral Resource and it is uncertain if further exploration will result in upgrading them to an Indicated or Measured Mineral Resource category.

7. A bulk density of 2.7 g/cm^3 was used for the modelled emerald-bearing schist. The value used is based on the figure used by previous owners and assessment of lithologies intersected in drilling.

In addition, ACA Howe has identified a total of 12 Exploration Targets that exist on the GEM property in and around the 2 large pits. Of the 12 Exploration Targets that ACA Howe has provided on Table

15 below, all but one (the Area between Discovery West and Cobra South), can be said to display both geological and mineralisation continuity, a requirement for JORC 012.

The Exploration Targets contain a total of 16.25 million tonnes of emerald-bearing schist (the mid points of the ranges as are provided in Table 15). However, the range in tonnages is large, from the maximum 8.0 million tonnes for Discovery Hill down to the minimum 0.25 million tonnes for Sable Kop. It needs of course to be repeated that not all of the Exploration Targets will achieve the estimated mid point tonnages provided in Table 15.

ACA Howe has however, recommended that at least the first 3 of these Exploration Targets are assessed in Year 1 of the 2 year programme, together with 3 selected from the remainder of the list. These latter 3 could be Discovery Hill, Discovery West to Cobra South and Cobra South itself.

Exploration Target mineralisation for the GEM emerald deposit			
Exploration Targets	**Location**	**Tonnage Range of Emerald-Bearing Schist (Mt)***	**Grade (Em. & Beryl) Range (g/t)**
Cobra pit	Main Zone 10.5 to 14 Level (510 to 485m RL)	0.6 – 0.8	4.8 to 8
	Far North	0.7 – 0.9	4.8 to 8
	South	0.4 – 0.5	4.8 to 8
Discovery Main	Below Inferred Resource	0.4 – 0.5	4.5 to 7
Discovery	West/Far West	0.35 – 0.45	4.5 to 7
	North	0.5 – 0.7	4.5 to 7
	South	0.4 – 0.5	4.5 to 7
	Hill	3.3 – 4.0	4.5 to 7
Area between Cobra South and Discovery West		0.3 – 0.4	4.5 to 7
Sable Kop		0.1 – 0.2	4.5 to 7
Beryl Kop	East	0.2 – 0.3	2.2 to 5
	West	0.4 – 0.5	2.2 to 5

*After applying 50% payability

Notes:

1. Exploration Targets were estimated using the definitions and guidelines of the JORC Code (2012).

2. Exploration Targets are conceptual in nature and are not Mineral Resources. An Exploration Target is material that has a reasonable degree of geological confidence but for which there is insufficient exploration to define a Mineral Resource. It is not certain that further exploration will result in the target being delineated as a Mineral Resource.

Both the Inferred Resources and the Exploration Targets have been estimated in compliance with the JORC code (2012).

In summary, the GEM emerald deposit has been historically a very important producer of gem quality emeralds. The current position is that the lost geological data base needs to be re-established through a systematic and informed exploration programme undertaken in line with international best practices. The preliminary exploration undertaken by Magnum thus far, has confirmed the prospectivity of the deposit and its potential to host a significant emerald deposit of shallow emerald-bearing schists. As mentioned above, the Property has previously been mined for gold and also has potential for a quartz (silica) deposit at Discovery Hill. Both the gold and quartz potential require further investigation.

Project-specific risks and opportunities with the further exploration of the GEM Property are as follows:

- The land owner, Peet Cilliers, confirmed to Wes Marais, GM of GEM, that the land claim by the Balapye community (Section 4.3.4) has been settled with the Land Claims Commissioner and that the property has been exempted from the claim. No documentation on the status of the claim is available to ACA Howe.
- The Inferred Resource has been estimated utilising data from past owners of the project. More recent work by Magnum, such as data from geological mapping, Lidar survey and RC drilling was readily available. Records of past production and drilling are incomplete. However, ACA Howe's independent involvement in the project since the early 1980s (intermittently) has proved valuable, both in terms of data availability, and the independence of observations and bulk sampling supervision by J. Langlands.
- ACA Howe has sought to reduce the risk in the Inferred Resource estimate by assigning grades from production data rather than by using drill hole data. In addition, the grade of the Inferred Resource represents a recovered emerald rough grade (including losses) rather than an in-situ grade. Further risks and uncertainties associated with the estimate are described in Section 14.6.1.

  Up to date survey data showing the underground working is not available. Therefore, ACA Howe has excluded all of the material from above 9 Level at Cobra North. . These upper levels appear to have borne the brunt of much of the post mid 1980's high grading and pillar removal operations undertaken by various miners and as such would not contribute significant volumes to any future resource estimate. Additionally, because of access issues, it would be difficult to access, define and estimate a resource for these levels.

- In any future estimates or eventual mining, it will be necessary to consider all potential deposit types, such as mineralisation that occurs in reaction zones and in structures.
- Tonnages reported are of inferred emerald-bearing schist identified in surface geological mapping and drilling and extrapolated from previously mined emerald mineralisation of the Cobra and Discovery zones, to some extent supported by semi-quantified emerald-bearing drill intercepts (i.e. emerald and beryl grain counts in drill core and percussion drill chips).
- The in situ grade that pre-mining sampling should aspire to understand, is always reduced by the various ore processing techniques to eventually provide a ROM number. The mining process should seek to get as close to the idealised pre-mining grade as possible. The most important of the factors which affect a recovered grade as opposed to an in situ grade is theft. Note that as theft is always significantly skewed towards larger, better stones, this always has a major impact on all parts of the sampling, mining, processing and marketing areas. However other factors such as mining technique and crusher losses also conspire to move a ROM grade away from the in situ geological grade.

URA plans to progress to trial mining at GEM. ACA Howe agrees with this course of action but notes that close attention should be paid to the additional recommendations in Section 18.

2. INTRODUCTION

ACA Howe International Limited (ACA Howe) was commissioned by URA Holdings Plc (URA) to carry out a Competent Persons Report (CPR) written in compliance with the JORC Code (2012) on the Gravelotte Emerald Mine (GEM or the Property) located close to the village of Gravelotte, in Limpopo Province, South Africa.

The report provides a summary of the geology, style of mineralisation, exploration and mining completed at GEM, and provides relevant information on the location, climate, access and infrastructure. Resources and Exploration Targets have been estimated by ACA Howe and are described in Section 14. Recommendations and a budget for further work are included in Section 18.

The CPR was prepared in accordance with the relevant rules and guidelines issued by the Financial Conduct Authority (FCA) and the European Securities and Markets Authority (ESMA). In addition, the CPR conforms to the guidelines dictated by the JORC Code (2012). The author of this report is Roy Spencer, ACA Howe's Senior Associate Geologist, who is a Competent Person ("CP") under the JORC Code. Roy has significant experience working at GEM, having overseen exploration and the planned restart of the mine for Magnum Mining and Exploration Limited (Magnum) from 2014 to 2016. Roy has extensive experience in the exploration and mining of coloured gemstones worldwide.

2.1. URA HOLDINGS PLC

URA has a registered address of 6th Floor, 60 Gracechurch Street, London, EC3V 0HR, UK. URA is listed on the Standard Market of the London Stock Exchange and requires the CPR for inclusion in a short form prospectus in relation to fundraising activities. The following persons are currently on URA's Board of Directors:

- B. Olivier
- E. Nealon
- S. Mulligan
- P. Redmond
- J. Treacy
- J. S. Smith

URA acquired the emerald assets at GEM from the Australian company Magnum Mining and Exploration Limited (Magnum) under the following terms:

- £100,000 settled in shares.
- AUD$200,000 for every 5 million carats of emeralds produced, up to a maximum of AUD$2 million.

The GEM emerald deposit has produced high quality emeralds intermittently from its discovery in 1929 to the mid 1980's when it was closed as an emerald mining operation. URA considers the GEM project to be ready for the development of staged mining operations and a medium-term production opportunity.

2.2. PROPERTY INSPECTION

Roy Spencer visited GEM from 29th May 2022 to 3rd June 2022 and visited a number of times during his past involvement in the project. The following activities were completed during the most recent visit:

- Review of historic data.
- Inspection of bulk sampling plant.
- Discussions with management with respect to aims, timetable, budget, security.
- Review of Magnum's bulk sampling sites.

URA has advised ACA Howe that no exploration has been completed since the site visit, however the following changes have been made to the site infrastructure:

- Upgrade of water supply and water storage capacity available for processing operations.
- Completion of site security upgrades and electrical fencing.
- Establishing, rehabilitating and upgrading of the main haulage roads between the open pits and processing plant.
- Rehabilitating and upgrading of the main electrical infrastructure.
- Approximately 1.5ha of historic gold slimes and tailings have been rehabilitated.
- Management accommodation has been refurbished.
- Upgrading of the dewatering and screening circuit.

2.3. DATA ASSESSMENT AND REPORT WRITING

Data was provided to ACA Howe by URA via online file transfer. The report also draws on information obtained during the site visit by Roy Spencer and his previous knowledge of GEM, and previous reports written by ACA Howe and others.

ACA Howe received full co-operation and assistance from URA's personnel during the preparation of this report. All units are metric unless otherwise stated.

2.4. LIMITATIONS

ACA Howe has utilised information provided by URA, which includes data from former owners of the Property. ACA Howe has made every reasonable attempt to verify the accuracy and reliability of the data and information provided, and to identify areas of possible error or uncertainty. During the visit in 2022, Roy Spencer reviewed some of the historical data and visited Magnum's bulk sample sites and plant.

Roy Spencer was able to confirm that Magnum's staff on site had constructed an appropriate emerald plant and had sampled appropriate sites both on the eastern and northern faces of the Cobra Pit, and in the Discovery Pit. The rehabilitation of the gold slimes dam to the east of the pits was still undergoing rehabilitation with indigenous local vegetation being established on the site. The URA team on site had collated the remaining historic mine data and stored it safely in a newly established archive room.

As well as the visit by Roy Spencer in 2022, he has visited GEM on many other occasions and has in depth knowledge of the geology and available data pertaining to the deposit. In addition, ACA Howe has previously written a number of reports on the project and has had sporadic involvement with the GEM project since the early 1980s.

To the best of ACA Howe's knowledge these details are in accordance with the facts and contain no omission likely to affect the success of the project. ACA Howe, its directors, employees and associates accept no liability for the omission of information or data which has not been brought to their attention or for errors in data and information which have not been possible to identify.

The business of mining and mineral exploration, development and production by their nature contain significant risks. Given the nature of the mining business many factors may be subject to change over relatively short periods of time and as such actual results may be significantly more or less favourable. Except as specifically required by law, ACA Howe and its directors accept no liability for any losses arising from reliance upon the information presented in this technical report. As of the publication date of this document, ACA Howe and URA are not aware of any likely or pending adverse effect as to business, operations, properties, assets or condition, financial or any other material change, which may arise within the six months following the publication of this report.

2.5. ACA HOWE INTERNATIONAL LIMITED

ACA Howe is an independent geological and mining consultancy based in the United Kingdom. ACA Howe, its directors, employees and associates neither has nor holds:

- Any rights to subscribe for shares in URA either now or in the future.
- Any vested interests in any concessions held by URA or any adjacent concessions.
- Any rights to subscribe to any interests in any of the concessions held by URA either now or in the future.
- Any vested interests in either any concessions held by URA or any adjacent concessions.
- Any right to subscribe to any interests or concessions adjacent to those held by URA, either now or in the future.
- The Author's only financial interest is the right to charge professional fees at normal commercial rates, plus normal overhead costs, for work carried out in connection with the investigations reported here. Payment of professional fees is not dependent either on project success or project financing.

3. RELIANCE ON OTHER EXPERTS

ACA Howe is not qualified to comment on legality of title and, as such, has not researched property title or mineral rights. URA provided ACA Howe with a digital copy showing the extent of the Mining Right in which URA has an interest.

Information on environmental aspects and work undertaken by the previous owners of the property, Magnum has been accessed by ACA Howe and reviewed. Historic information as to property title, mineral rights, taxes and royalties were accessed by ACA Howe from several earlier draft reports written for previous owners.

Sections 4 and 4.1 are entirely dependent on the information described above, which has been confirmed as being current by URA at the effective date of this report. The property boundary in the Mining Right document provided has been utilised in Section 14 due to the proximity of the Discovery pit and mineralised zone to the eastern boundary. ACA Howe has no reason to believe that the information provided is other than that which was reported by URA.

4. PROPERTY DESCRIPTION AND LOCATION

4.1. PROPERTY LOCATION

The GEM emerald mine is located in the Limpopo Province in north eastern South Africa (Figure 1). The town of Gravelotte forms ward 18 of the Ba-Phalaborwa Municipality, which is located in the Magisterial District of Letaba, Mopani District in the eastern part of Limpopo Province, and is some 50 km to the west of the Kruger National Park ("KNP").

Gravelotte (founded in 1916), located in the Lowveld geographic region of the Limpopo Province, lies roughly halfway between Tzaneen and Phalaborwa and some 466 km and 5 hours' drive from Johannesburg via Polokwane. Polokwane (formerly Pietersburg) is the capital of Limpopo Province and is located 146 km by sealed road west of Gravelotte.

The GEM emerald mine lies adjacent to and southeast of the townlands of the village of Gravelotte (23°57′ South, 30°37′ East), which has approximately 760 dwellings (Anon, 2015). Government services are provided in municipal offices, a police station, a post office, a library and a primary school. The village of Gravelotte has been designated a District Growth Point by the Ba-Phalaborwa Municipality.

The entrance to the GEM emerald mine is 2.4 km southeast of Gravelotte on the tarred Provincial R71 road from Phalaborwa. The distance from the Hoedspruit airport to the mine guest house is 65 km. The GEM mining area is centred on UTM co-ordinates UTM Zone 36S, 7,347,500mN, 2,600,000mE (WGS 84 Datum). Its geographic co-ordinates are 30^{o} 38' 43" East and 23^{o} 57' 32" South. The Property falls on the following maps published by the Chief Directorate, Surveys and Mapping of the Republic of South Africa:

- 1:500,000 Phalaborwa Topographic Map, published in 2008.
- 1:250,000 2 degree sheet Tzaneen Topographic Map, No 2330, published in 1980.
- 1:50,000 ¼ degree sheet Gravelotte Topographic Map, No 2330 DC, published in 2008.

The regional geology of the Property and the mine surroundings is shown on geological maps published by the Council for Geoscience as follows:

- 1:148,706 Geology of the Murchison Range and District, Memoir No 6, published 1912.
- 1:100,000 The Mineral Deposits of the Murchison Range, East of Leydsdorp, Memoir No 36 published in 1939.
- 1:250,000 Sheet 2330, Geology of the Tzaneen Area, published in 1987.

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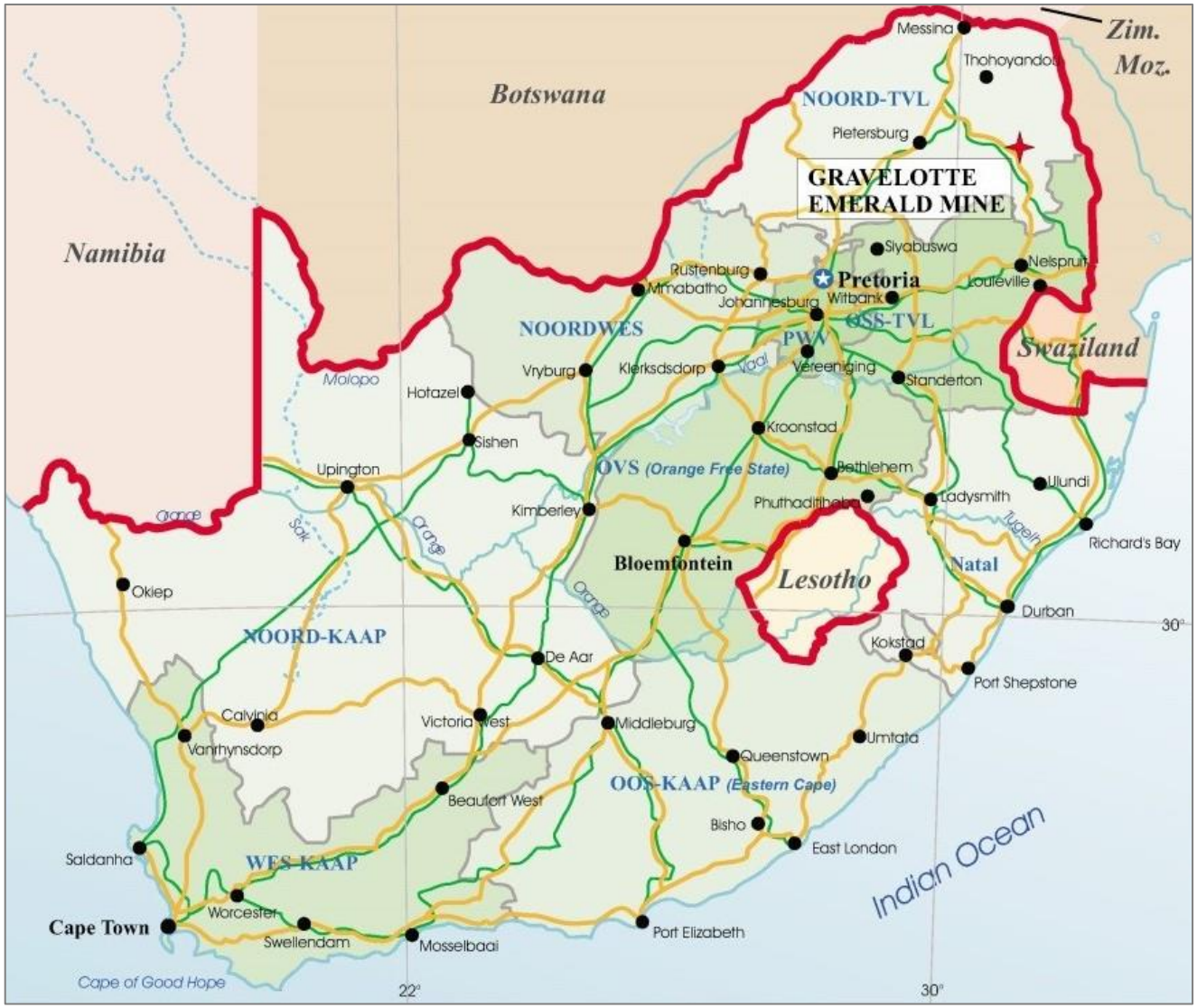
Figure 1: Location of the GEM emerald mine in South Africa



South African trigonometric survey plans use the Gauss Conformable (Transverse Mercator) projection (Parker, 2011) based on 1:250,000 two degree wide maps using a central meridian, which is 31º East for the Gravelotte area. The "Lo" coordinate system was originally coupled to the Cape Datum which is referenced to a modified Clarke 1880 spheroid.

However, since 1st January 1999, a South African geodetic datum (Hartebeesthoek 94 Datum) has been utilised which uses the World Geodetic System 1984 (WGS84) as its reference ellipsoid or datum (Parker, 2011). The Lo co-ordinate system continues in use but the datums are now required to be specified as either Lo or WG referring respectively to either the Cape or Hartebeesthoek94 datums. Elevations continue to refer to sea levels in Cape Town. This change in datums has caused some confusion, while visitors commonly often use UTM co-ordinates with the WGS datum.

4.2. PERMIT DETAILS

It is understood by ACA Howe that the Gravelotte emerald mine freehold and emerald mining rights were owned by Gravelotte Emerald Mines (GEM) in which Mr Peet Cilliers had a major interest. The mining rights to emeralds and quartz on the old Marais property extending to about 11 hectares to the south of the Discovery zones of the Gravelotte emerald mine, were previously owned by Venus Emeralds CC in which Mr A. Hardie and Mrs Hardie had a major interest.

In 2007, the two areas (Cobra and Discovery emerald and quartz deposits) were considered as one by Magnum, under the ownership of the GEM-Venus Holdings with Mr Cilliers acting for all owners.

On 28th January 2014, Magnum announced that it had signed an agreement to acquire 100% of the issued shares in GEM Venus Holdings (Pty) Limited ("GEM"). GEM holds 74% of the issued shares in Adit Mining Consultants & Trading (Pty) Ltd ("Adit Mining") and Venus Emeralds (Pty) Ltd ("Venus") which together hold all surface and mineral rights in respect of emerald mining and extraction at the Gravelotte Project. The remaining 26% of the shares in Adit Mining are owned by N.C. Mlambo (2%), J.M. Maswanganyi (4%), Gravelotte Community Trust (5%) and Gravelotte Mine Employee Trust (15%). The vendors of GEM Venus (now GEM) were also to be issued, in aggregate, 20 million shares in Magnum on the earlier of the commencement of economic production at the Gravelotte Project or 2 years from completion.

The two subsidiaries of GEM (Adit Mining and Venus Emerald?) together hold, without limitation, all rights in respect of emerald and silica mining and extraction at the GEM project at Gravelotte, together with a long term leasehold of the buildings and structures and portion or portions of the land required for the mining activities (from GEM?). As noted above, the remaining 26% of the shares in Adit Mining are owned by N.C. Mlambo (2%), J.M. Maswanganyi (4%), Gravelotte Community Trust (5%) and Gravelotte Mine Employee Trust (15%). GEM Venus is therefore the ultimate holding company of the Gravelotte Project (GEM).

ACA Howe is not qualified to comment on legality of title and as such, has not researched property title or mineral rights. The legislative details are available from South African Government Acts.

URA provided ACA Howe with a digital copy showing the extent of the Mining Right in which URA has an interest. The Mining Right was converted from an old order Mining Right and this came into effect on 24 July 2013. The Mining Right is valid for a period of 20 years which expires on 23 July 2033. It was issued in the name of Adit Mining Consultants and Trading Pty Ltd with company registration number 2007/021621/07. The location of the Mining Right is shown in Figure 2. The relevant details of the permit are as follows, with further information in Section 4.3 below:

- Permit owner: Adit Mining Consultants & Trading Pty LTD.
- Permit type: Mining Right for emerald and silica extraction.
- Area: 378.3275Ha (3.78 km^2).
- Renewal date: 23 July 2033.
- Surface rental costs: R5,000 per month in phase 1, and in phase 2 (which is after 6 months of commercial production and the first sale of emeralds) the rental increases to R50,000 per month.
- Obligations to retain permit: Mineral and Petroleum Resources Development Act of 2002.
- Royalties: Described in Section 4.3.5 below.
- Surface rights and legal access: Described in Sections 4.3.3 and 4.3.4 below.
- Permits required to conduct work: Water permits are required to conduct work on the GEM property. As far as ACA Howe understand, no additional permits are required to conduct work on the Property.

4.3. SOUTH AFRICAN MINERALS LEGISLATION

4.3.1. INTRODUCTION

Minerals legislation in South Africa is governed by the Minerals Petroleum Resources Development Act (MPRDA) No. 28 of 2002 and the MPRDA Amendment Act No.49 of 2008 administered by the Department of Mineral Resources ("DMR").

The Minerals and Petroleum Resources Development Act, Act No.28 of 2002 (MPRDA), became effective on 1 May 2004, replacing the 1991 Minerals Act. The objectives of the MPRDA are to adopt the internationally generally accepted right of the State to exercise sovereignty over the mineral and petroleum resources within South Africa and to give effect to the principle of the State's custodianship of the nation's mineral and petroleum resources. In addition, the MPRDA seeks to improve opportunities for Historically Disadvantaged South Africans ("HDSA") to become involved in the country's mineral and petroleum resources, whilst at the same time promoting development and economic growth.

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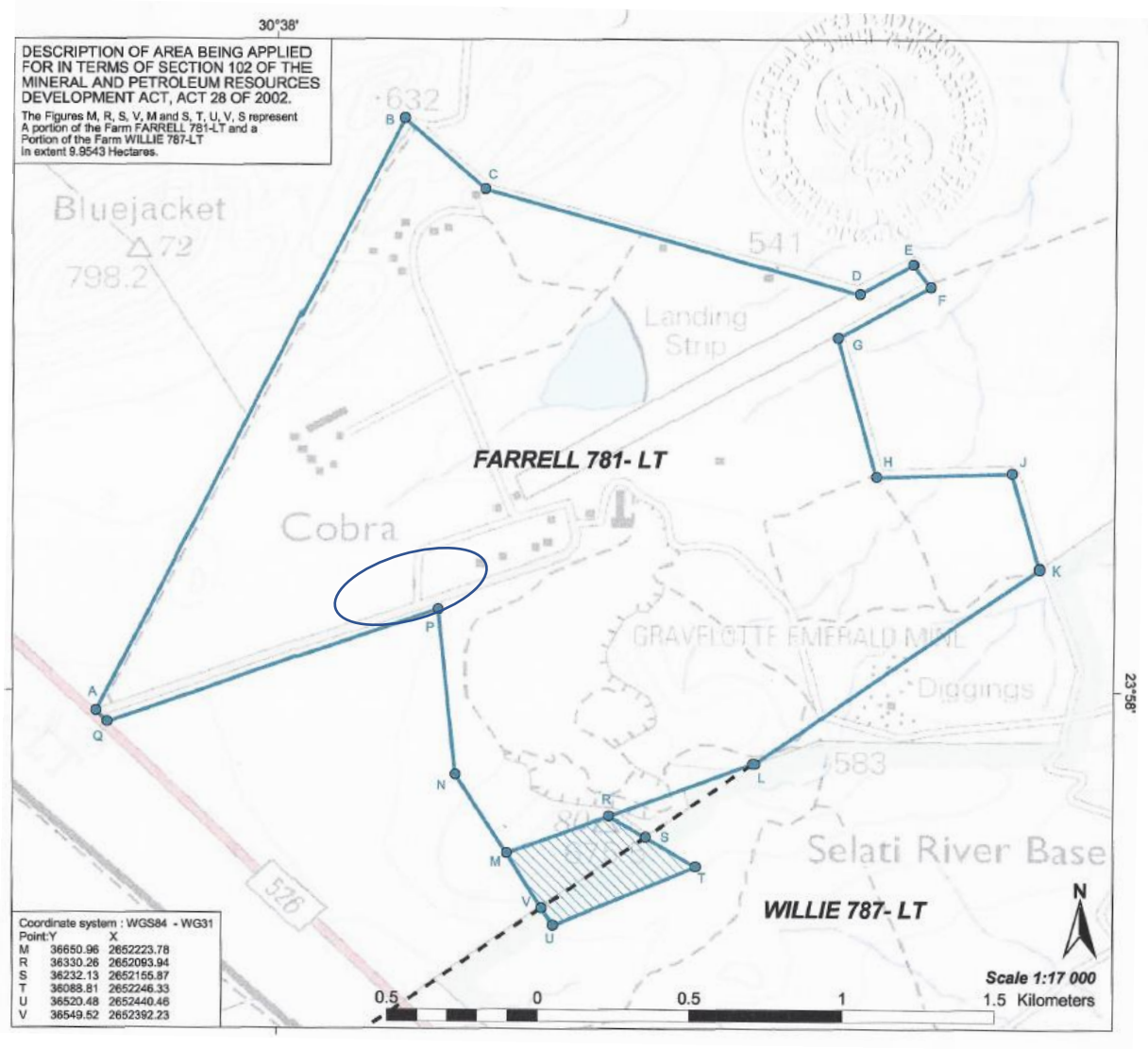
Figure 2: Location of the Mining Right on the Farrell and Willie farms



In South Africa, prospecting rights are valid for an initial period of 5 years with a subsequent renewal period of up to 3 years. In terms of the legislation, prospecting must commence within 120 days of a prospecting right being granted, and prospecting must be conducted continuously and actively thereafter. The holder must maintain its Healthcare Supplier Diversity Alliance (HDSA) status and adhere to the Work Programme it submitted with its original Prospecting Right application. These Work Programmes must include environmental and social compliance and exploration budget expenditures.

At the end of the 8-year validity of the prospecting rights, the Mineral and Petroleum Resources Development Act (MPRDA) provides for a Retention Permit that is granted for a period of up to 3 years with one renewal of an additional 2 years. The Retention Permit may only be granted after the holder of the prospecting right has completed the prospecting activities including a feasibility study, established the existence of a mineral reserve, studied the market and found that the mining of the mineral in question would be uneconomic due to prevailing market conditions. The MPRDA also provides for a subsequent Mining Right to the holder of a Prospecting Right. Mining Rights are valid for up to 30 years and can be renewed for similar periods of up to 30 years.

The MPRDA Act was amended by the MPRDA Act No. 49 of 2008 to include a code of good practice gazetted in 2009 and amended again in 2010 (Section 100(2)(a) MPRDA). This code is termed a "Broad-Based Socio-Economic Empowerment Charter" for the South African Mining Industry or the Mining Charter. Among other things, a portion of the ownership (26%) of any project is required to be held by HDSA's which effectively means BEE or Black Economic Empowerment Partners. In the case of URA, Adit Mining's BEE partner had become Magnum's BEE partner. The administration of the BEE program involves a 'scorecard' process which covers a wide range of matters beyond the scope of this report. Adit Mining in effect, requires that mining shares or assets sold to BEE investors be funded from cashflow debt-free within 2 years.

The Mining Right was converted from an old order MR and this came into effect on 24 July 2013 is valid for a period of 20 years which expires on 23 July 2033. It was issued in the name of Adit Mining Consultants and Trading Pty Ltd with company registration number 2007/021621/07

4.3.2. MINING RIGHT

The old order Mining Right held by Adit Mining (Ref: 153 MRC) over Portion 7 of the Farm Farrell 781 LT was converted into a new order Mining Right in terms of Item 7(3) in Schedule II of the Mineral and Petroleum Resources Development Act (No. 28 of 2002) on the 22nd February, 2013. Adit's Mining Right reference number is LP 30/5/1/2/2/153 MR.

A plan showing the corner points and boundary of the Mining Right (Figure 2) is shown in the formal Converted Mining Right document provided to ACA Howe by URA. This indicates that the eastern end of the Discovery pit is not included in the Mining right. In 2013, a prospecting licence application was made by a private company 'Rozolor', over an area covering part of the vacant land immediately

adjoining the GEM Mining Right. ACA Howe has no further information on the location or status of the application.

For a new order Mineral Right to be granted, Adit are required inter alia, in terms of the South African Mining Charter, to:

- Divest a portion of their investment to Historically Disadvantaged South Africans (HDSAs) before such a new mining right is granted.
- Lodge a Social and Labour Plan.

4.3.3. SURFACE RIGHTS

Figure 2 shows the surface land divisions of the property, being comprised of Portion 7 of Farm Farrell 781 LT and Portion 2 of Farm Willie 787 LT. In 1982, there were several other outliers of land and mineral rights owned by the emerald mine, which have since been relinquished by subsequent owners of GEM.

The surface rights to the GEM property are held by FarmingAcre Ltd., a private company controlled by Mr. P Cilliers.

URA has informed ACA Howe that the company has a notarial lease in which the right to access to Portion 7 (Farrel 781) and Portion 2 (Willie 787) is guaranteed until 1st March 2044. The lease is in the name of Gem-Venus Holdings Pty Ltd and the agreement is with Modjaji Manufacturing Pty Ltd, a company owned by Mr. P. Cilliers. The extent of the areas leased is as follows:

- Portion 7 - (Farrell 781) - 351.5144 Ha.
- Portion 2 (Willie 787) - 26.8131 Ha.

4.3.4. LAND CLAIMS

South Africa had previously carried out a Restitution of Land Rights programme using a claims process under the Restitution of Land Rights Act, No. 22 of 1994, as amended with respect to land held under the prior ownership laws, i.e. the 1913 Native Land Act.

This process was designed to give redress for past racially discriminatory laws or practices and covers persons or communities “who did not receive just and equitable compensation at the time of dispossession” of their land or property. The redress is normally made in the form of grants of State land or financial compensation. The land restoration processes with respect to community property associations are taking place in the Ba-Phalaborwa area under a willing buyer/willing seller process or by financial compensation funded by the State.

Further details of the process are given at http://www.dla.gov.za/component/content/article/347-land-claim/re-opening/771-faq.

The whole of the Property's surface rights were under claim by the Balapye community (Anon, 2015) as are large swathes of the surrounding farming properties. The land owner, Peet Cilliers, confirmed to Wes Marais, GM of GEM, that the land claim by the Balapye community has been settled with the Land Claims Commissioner and that the property has been exempted from the claim. No documentation on the status of the claim is available to ACA Howe.

4.3.5. MINERAL ROYALTIES

The Mineral and Petroleum Resources Royalty Act, 2008 (as amended) came into effect on 1st May 2009 following extensive public sector review. The royalty rate for refined minerals is capped at a maximum of 5.0% and the rate for unrefined minerals is capped at 7.0%. ACA Howe notes that semi-precious gemstones and precious gemstones fall under Schedule 2 of the act and would presumably be regarded as unrefined. This royalty is noted here as it will be applicable should URA achieve sales from production or bulk sampling.

The unrefined royalty formula is:

*Royalty (%) = 0.5 + (EBIT/(Gross Sales x 9)) * 100*
Where EBIT = Earnings Before Interest and Tax.

Various exemptions and reliefs apply, for example minor annual sales of less than R100,000 from material produced during sampling are exempt. The mineral royalty is tax deductable and relief of up to 75 % is available for marginal mines where operating costs exceed operating income.

4.3.6. TEMPORARY LEGAL SUSPENSION OF PART OF B-BEEE ACT

Section 10(1) of the Broad Based Black Economic Empowerment Act (B-BBEE) (Act 53 of 2003) states that every organ of state and public entity must apply any relevant Code of Good Practice issued in terms of the Act in:

- Determining qualification criteria for issuing licences and concessions.
- Developing and implementing a preferential procurement policy.
- Determining qualification criteria for the sale of state-owned enterprises.
- Developing criteria for entering into partnerships with the private sector.
- Determining criteria for awarding of incentives, grants and investment schemes in support of B-BBEE.

The Department of Mineral Resources (DMR) was exempted on the 30th October, 2015 for a year from applying the provisions of section 10 (1) of the B-BBEE.

This suspension was due to uncertainties as to the application of the provisions of the B-BBEE Act with respect to the MPRDA Act and the DTI Codes, as well as a review of the Mining Charter, caused by the fact that, under normal circumstances, the B-BBEE Act has a trumping effect in respect of any other law that is contradictory to the provisions of that Act.

4.3.7. ENVIRONMENTAL ISSUES AND WATER

An EMP for the project was completed by MSA Environmental in 2015. Conclusions and recommendations from the report are as follows:

"Conclusions:

Adit Mining has not yet commenced mining and will refrain until the documentation as required by the DMR are in place and approval is received. This assessment of the current status of the environment found that the main environmental risk relates to the old Gold slimes dam. Observations of the vegetation around this facility indicate however that vegetation is not being affected. Groundwater quality tests are required downstream of this facility in order to quantify any contamination.

A groundwater quality assessment from one of the active boreholes on site only indicated relatively elevated fluoride although this can be considered background concentrations and not due to mining activities.

The water quality in the two pits indicated elevated total coliforms with slightly elevated sulphate in the Cobra north pit. The total coliform concentrations make the water unfit for human consumption but there is no evidence to suggest water contamination as a result of past mining activities.

Recommendations:

1. *Install a water monitoring borehole downstream of the Gold slimes dump as well as the workshop/office/ fuel storage complex in order to monitor any plume should it exist. A borehole should also be installed at a location upstream of the mine to ascertain current background quality.*
2. *Reshape and rehabilitate the gold slimes dump.*
3. *The above ground fuel storage tanks need to be located on an impermeable surface with adequate bunding to contain at least 110% of the storage volume of the tanks.*
4. *The underground fuel storage tank is not to be used until further investigations can confirm their suitability.*

5. *An alien invasive vegetation removal program should be established (J3031 – Annual State of the Environment Report – February 2015 Page: 16)"*

URA advised ACA Howe that there was no evidence of elevated total coliforms in testwork by WSM Leshika in June 2016, though further information on this testwork is not available to ACA Howe.

Water Permit

Under the National Water Act (Act 36 of 1998) URA is required to register their water usage details with the Department of Water and Sanitation.

The Act requires "*All water users who are using water for agriculture: aquaculture, agriculture: irrigation, agriculture: watering livestock, industrial, mining, power generation, recreation, urban and water supply service must register their water use. This covers the use of surface and ground water".*

- Diversion of rivers and streams.
- Storage. Any person or body storing water for any purpose (including irrigation, domestic supply, industrial use, mining, aqua culture, fishing, water sport, aesthetic value, gardening, landscaping, golfing, etc) from surface runoff, groundwater or fountain flow in excess of 10,000 cubic metres.
- Discharges of waste or water containing waste in terms of section 21 of the National Water Act. This includes the following activities:
    a) Section 21I – engaging in a controlled activity defined as such in Section 37(1), with specific reference to irrigation of any land with waste or water containing waste generated through any industrial activity or by a water work.
    b) Section 21(f) – discharging waste or water containing waste into a water resource through a pipe, canal or other conduit.
    c) Section 21(g) – disposing of waste in a manner which may detrimentally impact on a water resource.
    d) Section 21(h) – disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process.
    e) Section 21(j) – removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people.

The above waste water uses include a number of non-point sources of discharge:

- Disposal of effluent to land or to a facility (such as a tailings dam, irrigated effluent or evaporation ponds treatments).

- Disposal of effluent to land or to a facility (such as a landfill, waste rock dumps, fly ash disposal or solid waste disposal).

ACA Howe recommends that a baseline study be conducted to provide a benchmark for future environmental programmes. The continued rehabilitation on the gold tails should be accelerated and the programme must be summarised by a formal set of documentations.

4.3.8. SECURITY ISSUES

ACA Howe is aware of a recent issue with armed robberies occurring at the property, the latest of which were dealt with by the local security guards employed by a large security firm based in Tzaneen working out of their offices in Letseteli.

The Property is also serviced by an effective informal local citizens "WhatsApp" based security support system. URA has plans in place to upgrade the security at the Property.

5. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1. ACCESSIBILITY AND TRANSPORT

The mine property has its own 1,400 m long, private dirt airstrip (see Figure 6) whilst commercial flights use the Hoedspruit Eastgate Airport (IATA Code HDS), 65 km from the mine. Eastgate currently has a number of daily scheduled services to OR Tambo Airport in Johannesburg and to Cape Town. South African Express Airlines services use Bombardier Dash 8 turboprop aircraft to Johannesburg and Cape Town. The airport shares its runway with the South African Air Force and large transport and jet aircraft can land there. High temperatures can limit the maximum size of aircraft using the airport.

5.2. PHYSIOGRAPHY

The Lowveld region lies at approximate elevations of between 150 and 600 metres asl (although exceptions do occur). The region forms a generally north-south trending bush covered plain (derived largely from granites) that rises gently westward from the KNP border towards the Lebombo Mountains.
The northeast trending hills of the Murchison Greenstone Belt (MGB) rise above a flat granitic peneplain around Gravelotte and reach a maximum height of 973 metres asl at Spitzkop, 4 km west of the mine. The general height of the peneplain around the mine is about 550 metres and Bluejacket (part of an easterly trending ridge of hills), immediately northwest of the mine, reaches a height of 798 m. Bluejacket lies between the mine and the village of Gravelotte. The managers accommodation in the north of the property is at approximately 600m asl.

The Cobra open pit is draped along a northeast trending granitic-cored ridge (known as the Germania Hills) which reaches elevations of up to 661 m. Slightly higher ground (at 675 m asl) lies immediately south of the Discovery pit.

The low hills of the MGB act as the watershed between the Groot Letaba River to the northwest and the Selati River to the southeast. The Selati is a tributary drainage parallel to the Olifants River which it joins further to the northeast. The Drakensberg escarpment, at over 1,900 m asl, lies about 40 km to the west-southwest of the mine.

5.3. CLIMATE

The climate of the Lowveld is characterised by high average temperatures and a single pronounced hot, wet season in Summer (October to March) and a cooler, dry season in Winter (June to August).

Rain falls either as either high energy convective thunderstorms (on about 25 days per year) or more continuously due to the southward movement of the Intertropical Convergence Zone. Tropical cyclones rarely come onshore from the equatorial areas of the Indian Ocean, but when they do so, can cause extensive flooding and local damage to transport infrastructure.

The nearest meteorological station with readily available data for Gravelotte is at Phalaborwa; whose average monthly data is shown in Figures 3 and 4.

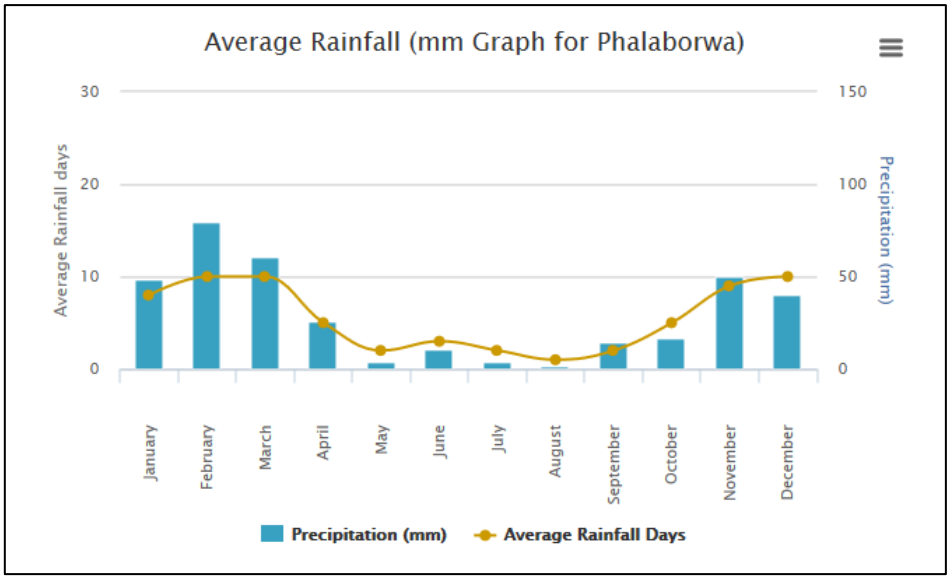


Figure 3: Average rainfall in Phalaborwa

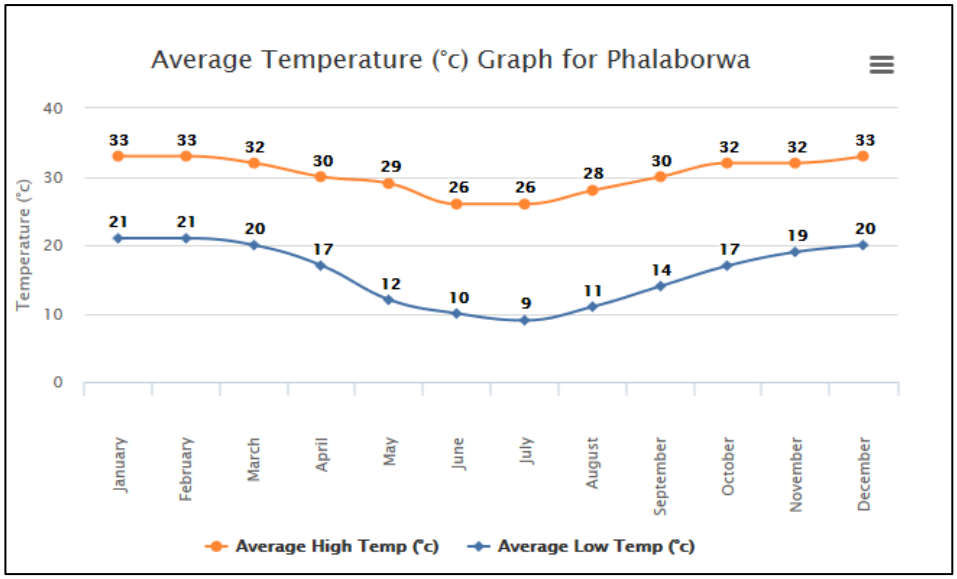


Figure 4: Average temperature in Phalaborwa

5.4. FLORA AND FAUNA

Vegetation in the area falls within the Savannah Biome with the predominant tree type being mopani-dominated woodlands based on granitic soils. Other trees include various thorn acacias, wild figs, tambutie and marula trees. No baobabs exist in the immediate mine area but are found in the near neighbourhood. The area would be described locally as mopani veld.

The mine property hosts a small herd of impala, small numbers of warthog and bush pigs, two kudu and several bush buck/nyala. Leopards are occasionally seen on the security/game cameras which are scattered around the Property, as are various types of snakes, monkeys, baboons, etc. Elephant are occasionally seen in the neighbourhood.

5.5. WATER AND POWER SUPPLY

The mine dwellings are currently supplied with potable water from boreholes. There is a shallow earth dam located on the northward trending river drainage course, the Cobra Creek Dam, which is capable of holding some 120,000 cubic metres when full. Cobra Creek continues for some 6 km to the Selati River in the east. Domestic water is supplied from several boreholes, mostly based on Karoo-aged (Jurassic – 160 mys) dolerite dykes. Water levels vary between 27 and 40 metres from the surface.

URA has supplied the following estimates of water usage on the Property:

- Domestic usage = 10,000 litres per day in June 2022.
- Water usage is approximately 1 cubic metre per tonne processed. It is envisaged that recycling will enable 50% of the water used to be recovered.

The Selati River, a semi-permanent 'sand' river, runs east-north eastwards from just south of the mine area and then swings eastward to pass south of Phalaborwa where it first joins the Olifants River. It is then joined by the Groot Letaba River.

The 1980's mine operation had a permit to pump water from the seasonal Selati River and from its riverbed sands during the dry season. The pipeline to the Selati River was previously protected by claims along the Selati Salient which crosses the adjoining 30,000+ hectare Selati Game Reserve Conservancy which partly surrounds the mine tenement. Based on the 1:50,000 topographic map and old claims plans, the pipeline exceeded 4.25 km in length. Both these claims and this water extraction licence have lapsed and ACA Howe has no knowledge of the likelihood of it being renewed.

The mine has some reserves of non-potable process water in the flooded 10 Level Cobra North pit and sump. During rainy periods, the Cobra pit holds varying levels of rainfall, which is not potable but would serve for production plant purposes.

Lesser amounts of rainwater accumulations also currently exist in the Discovery pit. URA intends to use this combined water supply to rework the readily accessible in situ and dump material to provide early commercial sale material, eking this supply out by judicious water reclamation.

URA estimates that the Cobra Pit is capable of holding up to 20 million litres of rainfall run-off water when full. The Discovery Pit is also estimated to be capable of holding approximately 10 million litres of similar run-off water when full.

The property is connected to Municipal 3-Phase power supplying 11kVa at 500kV to the mine which URA consider sufficient at least for the initial dump and bulk sampling plant requirements. ACA Howe is suggesting that the roof of the processing facility be clad in solar panels/sheets to provide an alternative source of power for the property.

5.6. HEALTH MATTERS

The nearest hospital to the property is the private clinic at the Stibium mine near Gravelotte. However URA has a casualty insurance policy with AfricaSafe-T who are based at Hoedspruit. They have land and air ambulance evacuation capability with a 30 to 40 minute on-site response time. Any evacuation would be to the Tzaneen or Phalaborwa hospitals. There is a Department of Health mobile clinic which services the property on a monthly basis.

Malaria is prevalent in the general KNP area and the Limpopo Department of Health and Social Development has a malaria control centre at Lulekeni, just to the west of Phalaborwa. However, the malaria risk in the Gravelotte area is considered low (See South African National Travel Health Network; www.santhnet.co.za, retrieved 17th February, 2016).

A chronic disease prevalent in the area is bilharzia (Schistosomiasis), a water snail born disease. Ticks are ubiquitous and tick-borne diseases need to be taken seriously.

5.7. LOCAL ECONOMIC ACTIVITY

Following the closure of Consolidated Murchison Mine (Pty) Limited ("ConsMurch"), the largest single employee in the area, ownership of 74% of this mining property is now held by the Australian company Stibium Mining Pty Limited ("Stibium") and has been subject to change of ownership approval. The underground mine is on care and maintenance while Stibium has commenced work on retreating oxidised tailings for their gold content. Following from this, the official unemployment rate in the area is 37.5%, with a youth unemployment rate of 50.2% (Anon, 2016).

This high rate of unemployment, coupled with the availability of experienced personnel with underground mining experience from Stibium should assist URA in the development of its labour and social programmes in relation to its new style mining rights applications. Now that the Stibium project is in a reduced state of production, tourism in the form of game viewing by touring and trekking and game farming and breeding is the dominant form of economic activity in the area; large scale cattle ranching being impractical due to foot and mouth disease.

A major problem in the area is poaching on the game farms, particularly with respect to elephant and rhino and the private game reserves on the western side of the KNP have set up their own organisation to combat it within their buffer zone area (see www.gamereservesunited.co.za). The 30,000+ hectare Selati Game Reserve Conservancy which surrounds the majority of the GEM property (especially to the north and east) is engaged in the breeding of rare antelope.

Issues also exist with illegal miners working long abandoned gold mines in the near vicinity of the Property.

6. HISTORY

6.1. PAST PRODUCTION

After the first discovery of emeralds in 1927 at Somerset Hill (the present BVB farm), 12.5 km east-northeast of GEM, emeralds were then discovered in the Germania Hills in 1929, on the GEM property (near the new village of Gravelotte), at what later became known as the Gravelotte, (or what is also called "Cobra", as it is used interchangeably in this document) Emerald Mine (GEM).

Between 1929 and 1982, the general area in close proximity to the village of Gravelotte formally recorded rough emerald production of at least 22.5 million grams or 22.5 tonnes. Little other production information for the period between 1929 and the late 1970's is available. The Cobra mine and plant at GEM has always been the largest producer in the region and in 1966, a high of 21 million carats was produced from the Cobra mine itself. These emeralds were derived primarily from the two Cobra pits, with lesser amounts from the adjacent Discovery pit, supplemented by emeralds from several very much smaller satellite operations located in the immediate vicinity, but outside of the Cobra/GEM property itself. No further details of production over this period are available.

The three main open pits and areas of past production are the Cobra North and South workings (450 and 250 metres long respectively and both oriented north to south) and Discovery (workings 380 metre long, oriented approximately east to west). These pits are located within a 168 ha area on the flanks of three 75 metre high granite cored hills – the Discovery, Cobra and Beryl/Sable Hills (together referred to as the "Germania Hills" in earlier times). No emerald mining has taken place deeper than about 20-30 metres below the deepest workings on all of these hills. All workings are open in both strike directions and at depth and at Cobra North, drill holes to about 75 metres below the adjacent plain level, have returned a number of emerald intersections.

It must be emphasised that all of the grades stated in this document should be considered in the context of the certain loses the mine would have been subjected to from the continual theft of many of the biggest and best of the emerald crystals throughout its long life. The impact that gemstone theft has on the economics of any gemstone mine cannot be stressed strongly enough.

The production data and grades summarised here are taken from the remaining onsite records available for inspection. Almost all mine records relating to emerald production (and the subsequent short-lived gold-mining episode from 1985 to 1987) have been removed by previous managements. Unfortunately, no official governmental records of either the emerald (or the later gold production) are now available either at the mine offices or from the DMR itself. The dumps derived from all of this work are still located around the old Cobra workings themselves. The tailings dumps from the earliest (and presumably the richest) workings to about the late 1970's have never been located but must exist and have probably been buried by more recent tailings.

Total plant throughput from all sources at GEM, including the satellite BVB-Midnite and Selati mines (not within the current Property boundary), processed at Cobra in the five years from 1978 to 1982, was 444,000 tonnes with an average recovered grade of 7.6 g/t. At GEM, hard rock production specifically from the mine itself, over the seven years for which historical records are mostly available at intervals between 1978 and 2002, was 480,000 tonnes averaging approximately 6.2 g/t of exported emerald rough (Table 1).

Table 1: Summary of Historic Production of emerald-bearing schist derived only from GEM

Year	Tonnes	Grade (g/t)
1978-82	319,000	6.37
1983	75,200	5.11
1985-86	79,500	5.03
2001/02	6,800	22.3
Total (8 years)	**480,500**	**6.2 (weighted average)**

The production between 1983 and 2001 is thought to cover times when management was undertaking a “short term, high returns” policy at the mine. Removing the aberrant 2001/02 figures (due to pillar removal, etc) provides a weighted average of 5.9 gpt from 474k tonnes. These figures may be an alternative to the “main” production of the period between 1978 and 1982 for which the weighted average of 6.37 g/t is derived. The total emerald ore and rough gem production from Gravelotte Emerald Mine records for the five year period from 1978 to 1982 inclusive (ACA Howe, 1983a, pp 13-16) are shown in Table 2.

Table 2: Summary of total Production at GEM from 1978 to 1982

Source of Material Delivered to Plant	Tonnes Processed	Emeralds Recovered g	Yield Grade g/t	Remarks
Cobra O/P ore	141,586	1,071,364	7.57	
Cobra U/G ore	62,503	242,678	3.88	
North Reef ore (Cobra N O/P)	25,102	137,566	5.48	
Discovery ore	82,421	534,096	6.48	
Selati ore	7,422	61,748	8.32	Off Property
BVB ore (inc. tails)	75,329	1,180,668	15.67	Off Property
Midnite ore	323	24,032	74.40	Off Property
Old Main Plant Tailings	18,626	38,604	2.07	Retreatment
New Main Plant Tailings	16,277	65,425	4.02	Retreatment
Roberts Dump (Cobra "waste")	4,415	7,392	1.67	Waste
No. 32 Dump Cobra 6LE	4,228	5,428	1.28	Low Grade 'Stockpile'
No. 4 Dump Cobra 10LE	1,468	1,528	1.04	Low Grade 'Stockpile'
No. 5 Dump Cobra 7LE	2,788	5,885	2.11	Low Grade 'Stockpile'
Discovery Dumps	1,790	6,762	3.78	Low grade 'Stockpile'
Selati Tailings	689	6,029	8.75	Off Property
BVB Tailings	23,517	371,370	15.79	Off Property

Table 2: Summary of total Production at GEM from 1978 to 1982				
Source of Material Delivered to Plant	**Tonnes Processed**	**Emeralds Recovered g**	**Yield Grade g/t**	**Remarks**
Total production from primary ore, tailings and dumps	**468,484**	**3,760,575**	**8.03**	**Total Production**
Production from all Primary Ore	394,686	3,252,152	8.24	All Primary Ore
Production from Primary Ore Cobra and Discovery Only	**311,612**	**1,985,704**	**6.37**	**Cobra Primary Ore Sources**
Production from tailings and dumps only	73,798	508,423	6.89	Inc. Off Property material
Production from GEM tailings and dumps Only	**49,592**	**131,024**	**2.64**	**Cobra Tails and Dumps Only**

Note: Yield grade based on grams of emeralds consigned in categories ABC/L, R/L, ABC/S, R/S, V/S

The emerald rough recovered was classified and weighed at the mine into categories ABC/L, R/L, ABC/S, R/S and V/S and consigned to the selling organisation in Johannesburg.

A comparison of the above mine production data with the official statistics given in Table 3 shows that the mine, including off site material, produced 183 kg of emerald more than the recorded official production, showing the difficulty in obtaining reliable data with regard to this deposit.

Table 3: Comparison of mine production data with official statistics	
Production Year	**Gem Production (grams)**
1978	1,140,032
1979	1,261,215
1980	436,554
1981	387,036
1982	351,863
Total	**3,576,700**
Mine Production 1978-82	3,760,575
Difference	183,875

6.2. 1982 TO PRESENT

In mid-1984, Golden Dumps Ltd. (a private South African company run by Messrs Pouroulis and Manolis) acquired the operating emerald mine and immediately instituted a regime of maximising revenue and reducing expenditure in order to optimise the short term profitability. The mine closed as an emerald operation in mid-1986 as a result of a numbers of issues and has only been worked sporadically since that time. Over a further 12 month period in 2001/02, the operation processed 6,800 tonnes at a grade of 22.3 g/t of exported emerald from easy to access, remaining accessible open cut and underground workings and pillars at both the Cobra and the adjacent Discovery open pits (Table 4).

Table 4: Gravelotte production data (August 2001 to July 2002)

	Ore Production (tonnes)					ROM* (kg)	Emerald** (kg)	Emerald Yield (g/t)
	Cobra U/G		Discovery	Stockpile	Total Ore			
	9 L	7 L						
12 months total	3,035	902	2,136	720	6,793	216.09	151.26	22.27
Percentage	44.7	13.3	31.4	10.6	100.0			

* ROM: includes waste & dirt attached to emerald stones. About 70% of ROM is emerald stones

** Emerald: Includes all A, B, C, D and Low Grade emerald production

Although dormant since 2002, in its hey-day in the 1960's, when it was considered to be the largest emerald mine in the world, Cobra employed over 400 sorters on site.

When gold was found by Golden Dumps in and below the Discovery open pit in the mid 1980's, emerald evaluation and mining was immediately discontinued and underground gold evaluation drilling and mining started. This operation stopped 16 months later after approximately 20,000 tonnes had been mined. Little information of this short-lived project is now available.

Apart from the 2001/2 emerald production noted above the property has basically lain idle since that time. However, as described in Section 9 below Magnum undertook some exploration work in the period from 2014.

6.3. SUMMARY OF UNDERGROUND DEVELOPMENT AT GEM (ADAPTED AFTER J LANGLANDS)

By the late 70's and early 80's, all significant production at the mine came from relatively shallow underground workings on the Cobra Hill (North and South workings) and by using the same sub-level caving (and aditing) techniques which basically focussed on recovering the blackwall reaction zones

located around the quartz/feldspar-rich boudins and other perceived siliceous-rich intrusives such as pegmatites or pegmatoids.

Exploration drilling by wagon, core and percussion rigs from both surface and underground was used to locate the mineralisation ahead of development. When identified, each boudin was removed via the sub-level caving method, a system which creates significant dilution. No face picking as was practiced at Merelani in Tanzania was ever undertaken at GEM. It is inherent with this technique, that only the 'boudin' associated mineralisation is firstly recognised and the removed. Everything else, mineralised or not, is regarded as waste and treated as such, i.e. sent to waste dumps or left underground. Thus when a lower cut-off grade of 3 gpt is applied to potential ore, anything under that was left behind!

The target grades during this time were +5 g/t which suited the boudin/blackwall type targets and the quasi-selective mining approach that was followed. It is important to note here, that there are 'pregnant' mineralised boudins that are indistinguishable visually from other very similar looking quartz and quartz/feldspar-rich what the miners called "granitic" bodies or sometimes 'boudins' or even 'pegmatites,' or 'felsics' in their mine descriptions. It would be useful to develop a system that enables the miner to distinguish chemically the mineralised boudins from any of the other barren silicious rocks.

However, this approach, as suggested above, precluded the alternative target possibilities explained previously (and which definitely exist at least at Discovery and probably at Cobra as well) and certainly resulted in the processing of significant amounts of waste and the potential loss of mineralised 'waste'. Nevertheless, mining required the visual identification of prospective areas which limited the potential for targeting perceived lower grades and maximising the total volume of feed to the plant. The lack of a thorough understanding of the local geology and mineralogy was also a limiting factor in creating an efficient mining plan.

The mining operation drove longitudinal drives into the Cobra and Discovery pits from benches 12 to 15 m apart, developed on both sides of the pit and which were portaled (in the case of Cobra) optimally in either of the competent Eastern Bounding Granite (EBG) or the Western Bounding Granite (WBG). Two longitudinal drives were then developed on the west and on the east of the growing pit. The western drive became the primary access to the mineralised zones from which all mineralised material was extracted. Drives were connected with a system of cross cuts across the strike of the zone (the emerald-bearing schist body), about 15 metres apart, allowing for access to the targeted boudin bodies.

There were a total of eight portals developed at Cobra over four levels with 10 Level being accessed from the open pit. Levels at Cobra North are approximately 15 metres apart vertically and Cobra South has only three sets of horizontal development between 5 and 7 Level (see Figure 11).

A total of 53 such cross cuts were developed with 11 on 5 Level, 15 on 6 Level, 17 on 7 Level and 10 on 9 Level. The full four level "sandwich" did not extend as far south as the southern extremity of Cobra South. Levels at Cobra North are approximately 15 metres apart vertically and Cobra South has only three sets of horizontal development between 5 and 7 Level. It must be noted that both the Cobra

and Discovery pits were developed entirely in MF schist packages. Cobra South development on 9 Level from the 9 Level portal on 760N, extends only to 575N. Apart from the so-called 'Discovery Shaft Granite' which is exposed only in two dimensions in the far western part of the pit there are no larger granitic exposures at Discovery, as at Cobra, in which to lodge portals.

Limited underground development took place in two localities at Discovery (and mainly for gold), one in the mid eastern section accessed by three portals on 5 Level and 6 Level as at Cobra and a second section in the west of the pit, accessed by an inclined shaft located on 5 Level. An adit was developed in the deep part of the western narrowing section of the pit at 7 Level.

There is very little technical information available for these areas although the eastern development appears to have been primarily to access the small gold deposit discovered in the Golden Dumps times and the western section was created under the same management at the same time, anecdotally to access emerald mineralisation in this part of the deposit. Access to the western workings was from the two entries on Levels 5 and 6.

It is estimated that there has been approximately 70 metres of underground development in the eastern location and a further 60 metres in the deeper western section.

6.4. TAILINGS DUMPS

Magnum estimated that approximately 3 million tonnes of emerald ore had been processed through the GEM (Cobra) operation since production began (from all sources available to the plant, some of which are outside the current property) in 1929 and noted that much of the tailings resultant from this work will still be located in close proximity to the mine workings (see above). There appears to be at least ten significantly sized dumps present on the property.

For example, during the 1977-1982 period, 50,000 tonnes of these tails (those derived only from the Cobra and Discovery ore), produced 137,000 grams of exportable emerald at a grade of 2.73 g/t.

An independent surveyor (J le Cordeur, 2015) measured four of the largest dumps and provided a figure of approximately 850,000 – 910,000 tonnes of coarse tailings and untreated material available within 1000 m of the proposed recovery plant site. Most of these tails are already crushed to –30 mm but there are also a number of large boulders (mostly quartz boudins and schist) present that would need to be broken and crushed prior to processing (J le Cordeur, 2015). ACA Howe has no knowledge of the methods used to calculate these tonnage figures from volumes.

6.5. HISTORICAL STONE SALES AND VALUATION

In his 1983 report, J. Langlands summarised four reported valuations and sales from parcels of Cobra rough in Europe. These are described below:

- January: A parcel of emeralds was derived from test work of Cobra and Discovery ROM production supervised by J. Langlands of ACA Howe. A 2.5 kg was parcel split by Huddlestone in London into 2 parcels (including 1.34 kg of 'waste'). Sold For USD $3.37 per carat (or USD $16.85 per gram).
- Mrs J.M. Coutts (independent gemstone valuer in London, 20 May 1983). A written valuation report of a 30 kg parcel valued at USD $0.10 to USD $25/carat for Cobra Emerald Mines Ltd.
- The Laing & Cruikshank Prospectus of May 1983 notes. "Sold 26.6 kg of emerald rough production at USD $2.32 per carat". With a range of USD $0.10 to U$16 per carat.
- ACA Howe report June 1982/3 version (J. Langlands). Reported that 18,886 tonnes of produced emerald from his Test Bulk Sampling in early 1083, produced a sales value (derived from now lost mine documentations) of approximately £40 per tonne of emerald at a grade of 5.34 g/t. This is a value of £7.61 g/t or £1.52/carat. Depending on the exchange rate current at the time, it is therefore reasonable to state that GEM emerald production in the 1983's, was in the range of USD $2.30 to USD $3.40 per carat.

No other verifiable sales or stone valuation data is known to ACA Howe at this time.

6.6. DRILLING

Detailed information on mine-era core and percussion drilling, geological logging and sampling methods are not available to ACA Howe. However, during his time onsite in 1982-83, J. Langlands of ACA Howe observed two serviceable, trailer and skid mounted, Tone core drilling rigs equipped to drill angled and vertical holes to about 200 metres using N and B series down-hole tools to produce core samples between approximately 61 and 37 millimetres in diameter. He recalled that core recoveries exceeded 95% and saw a specimen drill log which recorded 97% core recovery. He also observed three so-called Wagon drills capable of air-flush hammer drilling in angled and vertical holes up to approximately 152 millimetres diameter, to depths of a few tens of metres.

Digitising by ACA Howe in 2016, identified 167 holes drilled at Cobra and 217 at Discovery with associated downhole data. A summary of the available data is shown in Table 5. An additional 277 holes are shown on a plan of Discovery (but without corresponding cross sections), though these are not included in the table below.

Table 5: Drill hole data summary		
Item	**Cobra**	**Discovery**
Number of holes	167	217
Hole types	64 DDH (surface and underground), 71 wagon (surface), 32 unknown type (12 surface, 20 underground)	175 DDH (surface), 45 unknown type (surface)
Total metres	5,527	8,468
Cross sections	38 (mostly at 10 to 20 m spacing)	32 (mostly at 10 m spacing)
Emerald counts	1,016 (ranging from 0 to 2,204 - 2,204 in a 9.5 m interval)	2,082 (ranging from 0 to 257 - 257 in a 1.5 m interval)
Beryl counts	1,016 (ranging from 0 to 266 - 266 in a 3 m interval)	2,082 (ranging from 0 to 517 - 517 in a 1.5 m interval)
Gold assays	N/A	21 (ranging from 0.1 to 16.62 g/t Au - 16.62 in a 0.5 m interval)
Lithological intervals	679	1,619

A 21-hole RC drilling programme completed by Magnum in 2016, along strike from the Cobra Pit is described in Section 10.

6.7. GEOPHYSICAL SURVEY (GOLDEN DUMPS)

A Helimag proton precision survey with 50 metre spacing between lines was undertaken in October 1987 by GeoDass over part of the GEM property but the results of this survey have been lost other than for a set of sepia/paper magnetic contour plans held on site. A review of these black and white copies by ACA Howe in 2022, indicate the shape and dimensions of the Quarry Granite well. Magnum made contact with GeoDass in 2015 for information on this survey but no information was available.

6.8. OTHER AREAS

6.8.1. HOSTEL AREA (NORTHWEST OF DISCOVERY) (ADAPTED AFTER J. LANGLANDS)

The mafic schist belt and its eastern contact with granite was apparently traced through the flat ground north of the mine entrance road by trenching in the 1980s as shown in Figure 7. Bulk samples in the vicinity of the workers' quarters yielded some emeralds but the possibility of contamination at the test plant was not ruled out. There may be up to a 900 m strike length of favourable, accessible contact to be explored north of the mine entrance road. Previously, exploration may have been discouraged in this flat area of gardens, farm fields and the workers' quarters. The southern part of this target zone, 650m long, to the south of the road, is covered by large waste dumps from Cobra and Discovery pits. The total target strike length is 1,550 metres.

6.8.2. BERYL AND SABLE KOPS

The Beryl Kop Granite is located east of the Cobra pits, north of the Discovery Pit and forms the resistant core to a small hill which trends north northeast, sub parallel to the Cobra pits and their enclosing granites (WBG and EBG). The Beryl Kop was the focus of the earliest of the emerald workings, dating back to the early 30's, when mining took place on both the western and eastern flanks of the hill. Here the core granite is bordered by two parallel linear zones of reacted emerald-bearing biotite schists. Approximately 250 metres of underground driving is known to have been completed at Beryl Kop in the late 70's and early 80's. Few details of production, stone grade or value exist from the earliest times (1920's) from either of the Beryl or Sable Kop operations, are now available on site.

The granite in outcrop at Beryl Kop was described by T. Hannay (a mine geologist at GEM in the early 80's) as a coarse grained body with scattered molybdenite and some malachite which may be similar to the EBG. At surface, the granite is about 450 metres long and up to 100 metres wide and tapers off to points on both the southern and northern sides. Hannay also indicated that at depth, the Beryl Granite appears to dip to the west. At this time, the relationship between this granite and the granites at Cobra is unknown. The Willie Granite is located only a few hundred metres to the east, suggesting a potential genetic (and spatial?) relationship between these bodies, most of which occur in close proximity to emerald mineralisation.

During the ACA Howe visit in June 2007, a small, previously unknown quarry about 30 metres long and some 5 metres deep, was discovered about 80 metres from the top of Cobra Hill, upslope from the main haul road on the east side of Cobra North. This quarry exposes steeply dipping and folded, layered talcose schists striking north eastwards, about 10 metres in thickness, with evidence of pegmatites and biotite schists (reaction rock/zones). At the southern end of this quarry is a partially backfilled underground drive heading south westwards. The rock assemblage suggests emeralds may be present. This may be the northern part of the Beryl Kop zone.

In the early 1980s extensive mapping and reconnaissance was carried out at Sable Kop (about 200 metres southeast of Beryl Kop), on which a number of old workings are located. There is a reputed small emerald pit in an area of ultramafic schists 350 metres northeast by up to 100 metres wide, sub-parallel to Cobra, bounded and cut by granitic rocks and dolerites, northwest of a small 'salient' of metasediments (J. Langlands).

It appears that the northward trending Cobra, Beryl and Sable Kops zones etc. may be separated from the Discovery deposits with an easterly trend, by a thrust fault or lag fault dipping southwards.

6.9. HISTORICAL RESOURCE ESTIMATES

There have been a number of historic resource estimates on the GEM deposit. ACA Howe has located two separate resource estimates in the remaining mine files, which were reported by mine personnel in 1985 and have also located three draft format CPR reports, all of which were in the process of being

prepared in compliance with JORC (2012) by experienced ACA Howe consultants between 2013 and 2016 for LP Hill and Magnum.

6.9.1. MIKE WILSON - GEOLOGIST (MAY 1985)

M. Wilson had extensive experience at GEM, initially as geologist and then as Chief Geologist, at the mine intermittently between 1981 and 1986. As such, and with J. Langlands and R. Spencer, M. Wilson represents the most experienced source of geological and mining knowledge of the GEM property available to ACA Howe. However, along with most other technical and economic records of the mining operation since the 1900's (including over 58 years of mine life), almost nothing of Mr Wilson's once extensive record of monthly (and other) reporting currently exists at the GEM property. In parallel with the destruction of in excess of 5000 metres of drill core and other drill data by previous management, Mr Wilson's records no longer exist.

This 1985 Resource Summary compiled by Mr Wilson as part of a "Handover Report to the incoming "Golden Dumps" takeover team (a company controlled by Mr Pouroulis) was written on the 13th May 1985 and is one of very few written records discovered.

The Competent Person for this report has not been able to identify or verify information on the geological interpretation, volume estimation methods, the density applied or grade estimation techniques. However, it is noted that the estimate was compiled at a time when M. Wilson had full knowledge and access to the complete mine database and presumably the official governmental records. Therefore, ACA Howe has no reason to doubt the conclusions reached in the estimate.

Cobra Pit

Indicated Resources:	Total tonnage of schist within Cobra Mine Ore Zone to 10/0 Level	1,600,000t
	- Estimated tonnage of ore @+3gpt	640,000t
	- Estimated tonnage of ore @ +5gpt	400,000t
	- Cobra Nth Reef: Indicated @5gpt	45,000t
Inferred Resources:	Total tonnage of schist within Cobra Main Ore Zone between 10 and 12 Levels	620,000t
	- Estimated tonnage of ore @+3gpt	248,000t
	- Estimated tonnage of ore @+5gpt	155,000t

Discovery Pit

Discovery Main Ore Zone Present Indicated Reserves @ +5gpt to 30m Depth	155,000t
Discovery South ore body @ +3gpt	12,000t
Estimated tonnage @ 5gpt	155,000t ?

This estimate is considered historical in nature and is not reported in accordance with the JORC Code. The estimate has been superseded by the Mineral Resources reported in Section 14 of this report.

6.9.2. MINE MANAGER (SEPTEMBER 1985)

The unnamed mine manager (possibly a Mr Dennyssen?) provided a report to the Board of Directors in September, 1985 within which he outlined the Indicated and Inferred Resources as he understood them for the Cobra Pit only.

The Competent Person for this report has not been able to identify or verify information on the geological interpretation, volume estimation methods, the density applied or grade estimation techniques. However, it is assumed that the mine geologists would have been responsible for providing at least some of these figures and that the Mine Manager would have had access to the full database for the project and governmental records. There are small differences between these figures and those above by M. Wilson, and it is assumed that these differences are related to the strategy of "high grading" that the new 1985 management instituted during their tenure at the mine.

This report provided resource figures as follows:

"**Indicated Resource:** Total Tonnage of schist within Cobra Pit:

- Main Ore Zone to 10 Level: 1,500,000t
  Estimated tonnage @ +3gpt 600,000t
  Estimated tonnage @ +5gpt 375,000t
- Cobra Nth Reef @ 5gpt 45,000t

Inferred Resource: Total Tonnage of schist within Main Zone between 10 and 12 Levels: 620,000t

- Estimated tonnage @ +3gpt 248,000t
- Estimated tonnage @ +5gpt 155,000t"

This estimate is considered historical in nature and is not reported in accordance with the JORC Code. The estimate has been superseded by the Mineral Resources reported in Section 14 of this report.

6.9.3. JOHN LANGLANDS - ACA HOWE (MARCH 2013)

Report title: "Draft Acquisition CPR on the Geology, Resources and Potential of the Gem-Venus Project Emerald and Quartz (Silica) Assets Located Near Gravelotte, Limpopo, South Africa."

The above draft CPR was prepared by J. Langlands (Consultant with ACA Howe), as requested by Strand Hanson Ltd. (acting as NOMAD for L.P. Hill), for the "Project Stone", initially in April 2012. The report in essence describes the findings of visits to the GEM Property in 1982-1983, in February 1995, August 2002 and June 2007.

The report also describes the combined assets of GEM and Venus Emeralds CC (Venus) (the two companies which held the emerald and silica (quartz) deposits respectively). The CPR also introduces and explains the terms "Payability Factor" of 50% for the Inferred Resource in addition to the term "emerald-bearing schist" as used in future (and this) CPR's by ACA Howe.

An estimate of the inferred emerald-bearing schist and exploration potential is given in Table 6 (Langlands, 2013) also noted the following, "the *Inferred Resource* … used a set of 10 m spaced x-sections, 1:500 scale maps" *at a time when* "the data which was available at the mine far exceeds that which has been used in the present study" and also "These tonnages take no account of the mining method and a large proportion (*of the tonnages*) is not likely to be accessible by open pit mining due to high stripping ratios".

Table 6: Estimate of inferred emerald-bearing schist and emerald exploration potential (Langlands, 2013)

Name	Inferred emerald-bearing schist	Emerald exploration potential
	million tonnes	million tonnes
Cobra Hill Zone	0.69	Not estimated due to uncertainty of continuation at depth below inferred emerald-bearing schist, between converging walls of granite.
Discovery	0.34	0.32
Northeast of Cobra		0.65
East of Discovery (outside current Mining Right)		0.15
Southwest and South of Discovery		0.15
Northwest of Discovery		0.30
Beryl Kop		0.20
Sable Kop		0.07
Total	**1.03**	**1.84**

This table shows the inferred emerald-bearing schist of Cobra and Discovery as 1.03 million tonnes. The additional emerald exploration potential below the inferred tonnage of Discovery is 0.32 million tonnes which, added to the exploration potential of the seven additional named targets, (located within the current GEM Property) increases the total exploration potential estimated by J. Langlands to 1.84 million tonnes. These tonnages took no account of open pit extractability.

This CPR also included a discussion of the Inferred Emerald-Bearing Schist of the Cobra Hill Zone made up of the following 3 sub-areas:

- Cobra South (from 450 - 660mN in strike and down to 555m on 10 Level).
- Cobra North 670-1010mN in strike, down to 10 Level
- Cobra Underground from 450 – 660N in strike, extended down to 555 metres on 10 Level.

The CPR further provides an "Inferred Tonnage resource for Cobra Hill of 0.69mt over 650 metres of strike with horizontal widths from 5 to 40 metres and vertical heights (similar to 'dip' lengths) at Cobra from 13 m to 105 m of emerald-bearing schist". In Section 8.2, titled "Inferred Emerald Schist of Discovery Zone", the CPR provides the following figures:

- 0.34mt over 330 metres in strike in a zone also with horizontal widths from 5 to 40 metres and vertical heights from 35 to 85 metres, of emerald-bearing schist, dipping generally southward at 45 – 70^{o}.

The CPR further describes eight areas for warranting additional exploration including seven for which tonnages are described thus:

Cobra Area

- Emerald potential for Cobra North not estimated because of uncertainty of continuity at depth below 10 Level (due to insufficient drilling).
- Northeast of Cobra to the airstrip over 650 metres north from 1010N.

Discovery Area

- Discovery Main.
- East of Discovery (outside current Mining Right).
- Southwest and south of Discovery.
- Northwest of Discovery to Workers Quarters.
- Beryl Kop.
- Sable Kop.

This CPR further provides that:

“Payability factors” of 50%, “have been applied to estimate the proportion of the emerald exploration potential which may be economically workable in due course”.

“Potential tonnages reported here are not aggregated from individual volumes for which emerald grade data exist, since grade data are not available in the required detail, from adjacent samples nor from adjacent production sites. Tonnages are provided as a measure of the scale and relative importance of the various targets.”

6.9.4. JOHN LANGLANDS - ACA HOWE (FEBRUARY 2014)

- Mr. Langlands revisited his earlier (2013) estimate but reduced the number of Exploration Targets to six.
- The Inferred Resource estimate was the same as previously (1.03 M tonnes at 6.4 g/t). This estimate is also based on a manually derived tonnage calculated from individual calculations of 10 metre separated cross-trend sections.

6.9.5. ANDREW PHILLIPS - ACA HOWE (2016)

Report title: “The Geology, Resources and Exploration Potential of the Gravelotte Emerald Project, Located Near Phalaborwa, Limpopo Province, Republic of South Africa.”

ACA Howe was commissioned by Magnum to finalise the 2014 CPR produced by J. Langlands. The Competent Person for this version of the CPR was A. Phillips. He visited GEM in 2016, reviewed a significant volume of historical data and supervised 3D modelling utilising data digitising from historical cross sections. However the work was again put on hold by Magnum before the completion of the CPR and Resource estimation and no further work on the GEM Property was completed by ACA Howe until the current version.

7. GEOLOGICAL SETTING OF THE GEM AND ADJACENT PROPERTIES

7.1. REGIONAL GEOLOGY

The mine property is located on the southern margin of the Murchison Greenstone Belt (MGB), a 3.3 billion year old ("Ga") Archaean greenstone belt (135 km long by up to 120 km wide) bounded to the north and south by younger Archaean tonalitic gneiss and granite terrain of the Kaapvaal Craton (Jaguin, 2012b). The earliest geological description of the geology of the Murchison greenstone belt (Hall, 1912) and its granitic surroundings mentions the mica deposits associated with the pegmatite field near Mica (Olifants River Mica Field) and the fact that younger granite intrusions occur.

The MGB extends westwards beneath the Transvaal Drakensberg Escarpment and thins out to the east northeast. The earliest work in the area was Hall (1916), followed by Van Eeden (1939) and then post 1980 a wide variety of authors have discussed the structure of the MGB, the intrusives surrounding it and the mineralisation associated with it. The descriptions below has been synthesized from the following authors: Brandl (1987), Vearncombe, et al. (1998), Poujol et al, (2012 and 2021), Block, (2012), and SACS, 1980 & 1998.

The MGB is seen to occur within a crustal suture known as the Thabazimbi-Murchison Lineament. Several linearly disposed mineral deposit trends occur within the MGB, the most famous of which is the Antimony Line (antimony-gold) and the parallel Zinc-Copper Line. The gross shape and lithology of the MGB is shown in Figure 5.

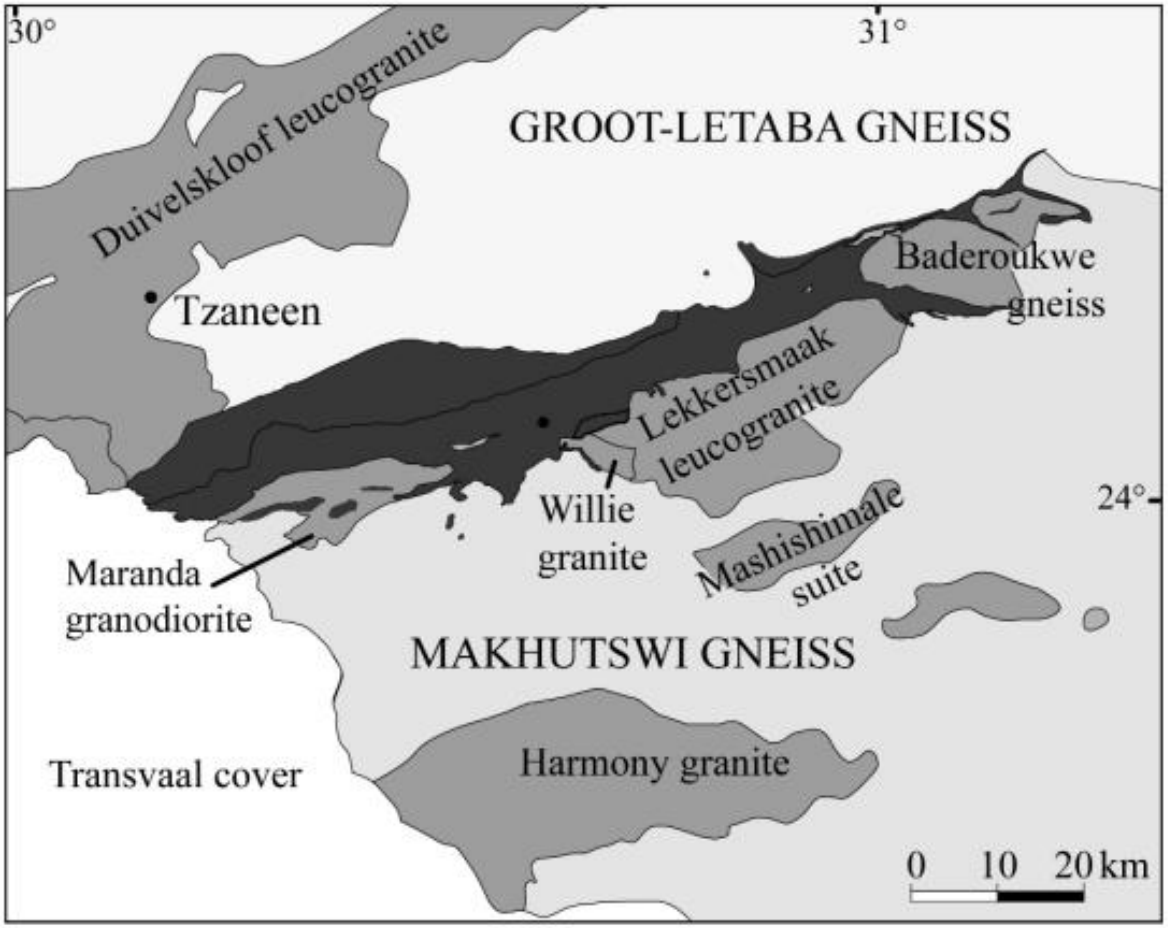
Stratigraphy

The MGB consists of a linear parallel package of metavolcanic and metasedimentary rocks surrounded and intruded by granitoid rocks (SACS, 1980 and 1998) on both margins. The generally northward-younging lithologies of the MGB are known as the Gravelotte Group and include:

- Mac Kop Formation.
- Weigel Formation.
- La France Formation.
- Leydsdorp Formation.
- Mulati Formation (MF) – the basal unit and the rocks which host the GEM mineralisation.

The regional strike is east-northeast, the rocks of the MGB generally dip vertically or steeply northwards, and the structural style is characterised by polyphase isoclinal folding and shearing parallel to strike. The southern margin of the belt is partly occupied by the Mulati Formation (MF) composed of metamorphosed mafic and ultramafic lavas, felsic tuffs and serpentinites. Due to cross-cutting synformal flexures on northwest trends, talcose magnesian schists with traces of chromium, representing the ultramafic lavas, may be brought into close contact with granitic rocks in greenstone salients and remnant keels in the granite terrain.

Figure 5: The Murchison Greenstone Belt (dark grey) (after Jaguin et al., 2012)



Emeralds are known to have been formed by the reaction between the chrome-bearing, mafic-ultramafic schists of the MF and beryllium-bearing pegmatitic fluids in structurally and lithologically favourable zones. In the case of beryl, emerald and molybdenum in the Gravelotte area, mineralisation is in part, closely related to albite-quartz pegmatoids. Late stage pegmatitic hydrothermal fluids have created a pervasive potassium metasomatism of the magnesian schists illustrated by the development of biotite and phlogopite.

The following regional and local controls on the distribution of emeralds have been recognised in the literature:

- Contact between magnesian schists and the marginal pegmatitic zone of the Kaapvaal Craton granites.
- Northwest-southeast trending cross folds cutting the regional east-northeast trend of the contact.
- "Keels" of schist derived from ultramafic rocks enclosed by pegmatitic granite.
- The presence of large amounts of talc and dark micas.
- The occurrence of abundant euhedral pyrite cubes.
- The occurrence of molybdenite with emerald and emerald-bearing schist.
- Proximity to minor granite pods, quartz-albite pegmatoid bodies and schlieren and quartz pods and veins.
- Potassium metasomatic effects as shown by development of dark mica ("blackwall").
- The occurrence of tourmaline, fluorspar and apatite.
- Structural perturbations within favourable rock types.
- Joints, discordant fractures, sometimes with feldspathic, carbonate-bearing schlieren.

7.1.1. INTRUSIVES

Poujol, et al (2021) quoted below is the most recent and probably the most accurate and concise of the many references to the general Gravelotte area and the GEM Property in particular.

"Existing *granitic* geochronological data for these rocks are scarce, and we are in the process of re-dating the two mica granites. Excluding old, unreliable Rb-Sr ages, only two of the facies have been dated: The Discovery granite yielded an age of 2.969±17 Ga (upper intercept age, Poujol, 2001) and the Willie granite was dated at 2.820±38 Ga (Poujol, 2001). The latter age is of critical importance. As the Willie granite is clearly cutting across the two large fine grained plutons of the Lekkersmaak suite, this puts a minimum age constrain for these intrusions, that must be older than 2.850 Ga. We speculate that they may have formed concurrently with the Discovery pluton, which we regard as a manifestation of the same plutonic event, at ca. 2.96 Ga – the age of the end of the accretion of the MGB, and probable age of the main tectono-metamorphic event in the belt. The younger Mashishimale pluton

was intruded at 2.698±21 Ga (Poujol, 2001) immediately to the South. The range of ages available on the leucogranites shows that those rocks are among the first occurrence of 2 mica granites.

The few age datings of 2.82-2.97Ga (with large errors) reported on respectively by Robb and Robb (1986) and Groat (2008) and recently from Poujol (2021) for emeralds collected from the GEM workings, also support an age of emerald formation that is broadly compatible, and probably contemporaneous?, with the 2.82Ga (38my error) age of the Willie Granite (Robb and Robb 1986, Groat, et al 2008)" (Table 7).

This would also mean that the mafic meta-lavas of the Mulati would have be present and available to accept the Be-rich fluids being driven out and away from the latest emanations of the Willie Granite. The structure of the Selati Salient may have "peeled off" a section of the MF moving the peeled off section to assume its present broadly east to west linear orientation and leaving the remaining MF metasediments to continue on their way to the existing regional east northeast strike towards the second largest emerald deposit in the area, the BVB deposit 12 km east of GEM.

Table 7: Age relationships of granites in the Gravelotte area

Area	Age (Ga)	Error
Mulati Schists	2.83 to 3.09	Large?
Willie	2.82	9
Lekkersmaak	2.85 minimum	
Discovery	2.97	17
Makhutswi Gneiss	3.07 to 3.08	
Cobra	2.83 to 2.97	
Mashishimala	2.69	21
(Sandawana mineralisation)	2.6	

7.1.2. REGIONAL GEOMORPHOLOGY (ADAPTED AFTER BATCHELOR, 2005)

The regional geomorphology of the Lowveld in the GEM area is one of repeated exposure of Archaean basement to weathering and exhumation of in situ weathering profiles which may have a bearing on the prospectively of the GEM area.

At the end of the Karoo Super Group (250 mys ago), there would have been 8-10 kms of sediments and volcanics deposited above the Archaean basement of the GEM area with its already formed emerald and beryl deposits hosted by the metavolcanics of the MF. At this time, erosion set in with the creation of Gondwanaland eventually resulting in the exposure of the kilometres thick package of

sediment, a situation which persists to this day. The net result of the eventual removal of the Karoo and the exhumation of the Archaean land surface has been the exposure of the Murchison emerald/beryl deposits at some time in the distant past.

During this time a long-lived period of high rainfall occurred with the development of deep and extensive tropical weathering profiles throughout the Lowveld and the Gravelotte area which has continued to be the case for the last few millions of years. Evidence of these soil profiles are shown with the exposure of red residual lateritic soils of at least 20 metres thickness, which have been identified in the Mulati riverbed where it runs through exposed chloritic schists presumably of the Mulati Formation.

The floods of 2000 in the Gravelotte area, have exposed calcrete deposits developed on deep weathering granitic profiles. The inference from this is that the peneplain on which the GEM/Selati area was exposed was in a time of tropical high rainfall, well before the present low rainfall moderate climate era. No dates are known for this change in climate and exposure of the tropical weathering soil profiles but it must have taken place a long time ago (Batchelor 2005). Remnants of the period of tropical climate regionally are also located in the deep valleys of the Drakensburg escarpment, for example in the Magoebaskloof near Tzaneen where small patches of tropical forests still exist.

The pitting programme that Magnum carried out across the GEM property has revealed a very widespread red residual soil profile over much of the central part of the property. Few of these pits penetrated to identifiable bed rock. Additionally, several of the +/- 60^{o} RC holes at the northern part of the Cobra Pit regularly encountered up to 4 metres of red soil, interpreted at the time as in-situ soil profiles, a number of which reported emeralds above the bed-rock with hard duricrusts being developed in some instances.

A summary showing where emeralds were discovered in the residual 1-4 metres of red soil of 12 holes is shown in Table 8.

Table 8: RC Drilling - Cobra Far North Extension

Hole No	Depth (m)	No. emeralds/green beryl
1	4-5	1
3	1-3	2
3A	0-1	2
5	1-2	1-2
6	0-3	35
7	0-2	35
13	0-1	3

Table 8: RC Drilling - Cobra Far North Extension		
Hole No	**Depth (m)**	**No. emeralds/green beryl**
14	0-2	2
15	3-5	6
16	0-1	1
17	1-4	5
19	0-3	32

12 of the 20 RC holes drilled recovered emerald in the near surface residual soil profile. These results strongly suggest that the residual soil profile around the GEM property should be examined for remnant emeralds. A probable palaeo "talus" deposit exists close to the "hockey stick" area at the Cobra Pit and this should also be tested for emerald.

7.2. LOCAL PROPERTY GEOLOGY

7.2.1. GEOLOGY AND DISCUSSION OF THE GEM PROPERTY

The following description contains a summary of the geological understanding of the GEM Property based on the author's experience at GEM and an extensive literature search by ACA Howe during the production of this report. It should also be noted that an extensive search of the remaining plans and documents on site, has come up from very few geological plans of the emerald mining history of the either of the two main pits (Cobra and Discovery), and none whatsoever of the gold operations from 1984 to 2001.

The files of ACA Howe had enough documentation to enable ACA Howe consultants, J. Langlands and A. Phillips, to create a small scale property plan for the draft CPR's between 2013 and 2016 (Figure 6), but none of the detail is currently available to ACA Howe. R. Spencer was able to add a little to this Figure 6 for an internal Magnum (2016) report and for the 2016 draft report by A. Phillips, including the results of the property-wide pitting programme and which resulted in the identification of the Quarry granite and the contact of the Willie Granite with Mulati Formation schists in the east of the property. This Figure 6 compilation, with the more recent adaptions, is now the only reasonably accurate surviving geological plan of the property.

The present author has noted that much of the northern and north eastern part of the freehold property from the 'Hostel' area north to the limit of the surface lease with Selati, then eastwards over the high ground leading to the mine managers house, across to the stable and magazine area, is covered by quartz, quartz mica, and quartz fuchsitic schists and quartzites (some pyritic). These outcropping quartz-rich meta-sediments are responsible, in part at least, for the higher ground that marks the boundary with the Selati Game Reserve and presumably are part of the Leydsdorp Formation (LF) unit that overlies the MF which itself appears to be concentrated in the mine area.

Similar quartz-rich schists occur directly east of the Beryl and Sable Kop areas and extend to the eastern licence boundary with Selati. No structure has been identified with these eastern schists, but assuming they are indeed part of the LF. rocks, then the property-wide general structure must be either syn- or anti-formal in nature with the MF schists of the mining area located in the core of the structure.

A study of satellite imagery from 2003 – 2020 of the area close to the GEM property shows very clearly where the GEM property fits into the local geological context (Figure 7) vis a vis the local granites.

The intrusive units at GEM include presumably Archaean-age intraformational diabase dykes, and Karoo age dolerites, the most important of these being the east to west trending dyke, (noted on Figure 6), along which a water resource has been located. A thin dolerite dyke outcrops on the eastern pit wall at Cobra and contributes to the instability of the exposed eastern face of the pit.

Other than the various granitic rocks found in and immediately adjacent to the 3 pits, several other small granitic plugs and mini-plutons have been discovered on the mine property. These are primarily the coarse grained Quarry Granite underlying much of the Cobra Creek Dam, several smaller granitic intersections located as a result of the RC and pitting work north of Cobra Pit and at least one coarse grained pegmatitic granite discovered to the north east of the Cobra pits during the Magnum pitting programme.

The EBG body appears to be granodioritic in composition, is a cohesive and coarse grained 2-mica, S-type granite that appears to have similarities with both the Willie Granite to its east and to at least 1 of the small bodies at Beryl Kop.

The WBG is an aplite, quite different from the EBG, and containing none of the molybdenum, pyrite or phenakite that characterise its eastern counterpart and has none of the characteristic features of the 2-mica granites such as the EBG and the Willie.

The EBG can be examined closely and informatively, on the ‘saddle’ between the North and South pits at Cobra where it is exposed over a vertical distance of about 20 metres between 1 and 3 Levels. It is clear that here this intrusive granite has the form of a tapering body (Figure 12). If the EBG continues with this form into the North pit, it may help to explain why the EBG at about 800N, appears to be absent at depth and as drill information shows, it would appear that the MF schist package is present ‘underneath’ and eastwards past where one would expect the vertical extension of the EBG to occur.

The tapering form of the EBG is important as it has helped to create the concept of a ‘Cobra Deep’ target which may link the Cobra emerald-bearing schist body with those of both the Beryl and Sable Kops, and even more importantly, may provide a link between Cobra and Discovery emerald-bearing schists as well. However, with the EBG, these 2 lenticular bodies provide a competent element on either side of the Cobra schist zone which have been used to access the schist body.

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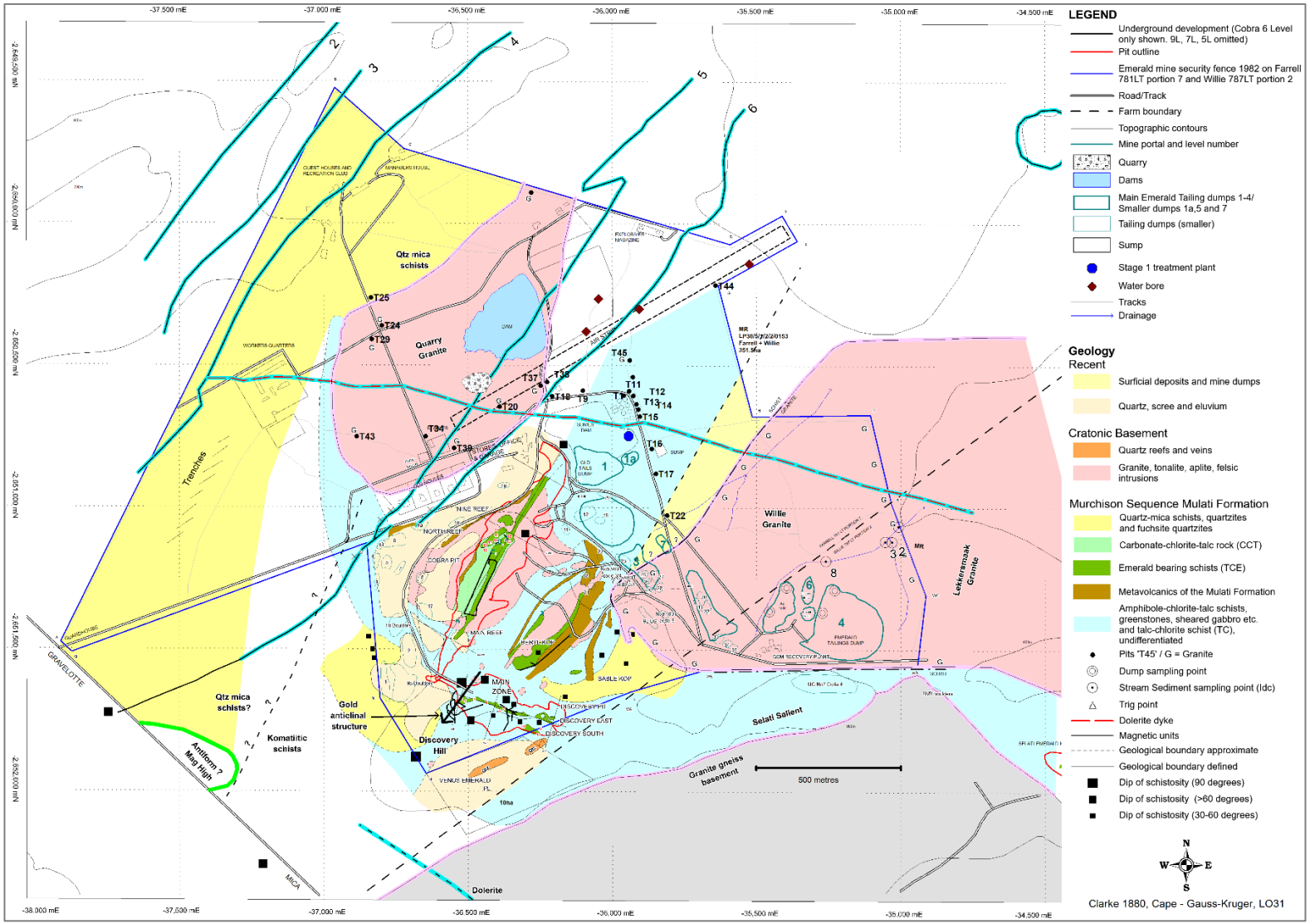
Figure 6: Surface layout and geology of the GEM Property (Clarke 1880, LO31 coordinate system)



Additionally, surviving mine notes from Discovery Pit, make mention of various granitic rocks being intersected underground and increasing with depth below that pit floor. Poujol et al (2021) also makes mention of the small Discovery Shaft Granite outcropping on a western face/traverse at Discovery Pit.

The context of granite emplacement in the GEM area is extremely important in the understanding of the emerald mineralisation at GEM. This latter is all about the small, (+/- 8 ha), 2.83Ga-aged Willie granite which outcrops immediately east of the Cobra and Discovery Pits. The Willie is well, if briefly, described recently (2021) by Poujol, et al, who provide the modern, relatively modern Pb-U Concordia age of 2.818Ga +/-9Ma and notes that the Willie would have been intruded into the pre-existing basal Gravelotte Group volcano-sedimentary sequences the Mulati Formation (3.09Ga), the hosts for the GEM mineralisation.

Figure 7 shows the western part of the 2.82Ga Willie Granite as it relates to the GEM properties and the several small, semi-linearly disposed emerald showings within the Selati Salient within which the Discovery Pit emerald-bearing schists are located.

The image also shows the younger Archaean Basement (3+Ga) Makhutswi Gneiss (MG) located south and south east of GEM but separated from the 8 km^2 Willie (W) pluton by the metavolcanics of the Mulati Formation (MF) that outcrop within the <1km wide structural element known as the Selati Salient (SS). The salient appears to have acted as a "buffer" zone between the semi rigid basement rocks to the west and the intrusive high level ("S- type) granitic rocks of the 2.82Ga Willie Granite to the east.

It is possible that the Selati Salient (see below) is a structural element (perhaps the thrust or lag fault interpreted by J Langlands), and either transecting the eastern part of the Willie or possibly within the adjoining slightly older, Lekkersmaak Granite (LS).

Image 1 also shows a linear "fracture" with a similar strike as the salient located about 2 km northeast of the Selati salient. The Mulati river is occupying this fracture at present.

The GEM workings can be clearly seen to the west of the image located at the most western extremity of the Willie and themselves appearing to "wrap around" the northwestern nodal point of the Willie and within 500 metres of that point. This phenomenon alone must emphasise the geographic (and genetic?) origin for the GEM mineralising hydrothermal and Be-enriched source fluids, in and around this "nodal" point. This also emphasises the role of the salient in locating hydrothermal fluids and the fact that the salient itself is a location for a number of smaller emerald deposits, in much the same was as is the case for the mineralisation within the Cobra Pits.

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Figure 7: Selati-GEM and the Willie Granite (image approximately 8.3 km east to west). MF = Mulati Formation, W = Willie Granite, MG = Makhutswi Gneiss, LS = Lekkersmaak Granite, SS = Selati Salient

J. Langlands has noted that in his opinion, the Discovery Pit is separated from the Cobra (and Beryl Kop) zones by a thrust or lag fault. It is the opinion of R. Spencer that this interpretation is likely to be correct and that the southward dipping thrust fault is likely to locate a thrust event which moved a 'slither' of emerald-bearing MF schists from the main Cobra zone, up and over the more stable and slightly pre-existing Willie Granite.

Additionally, the strike of the Mulati Formation metavolcanics at Cobra is east northeast (parallel with the regional strike) and it can be no coincidence that the contact zone for the numbers of small emerald showings that occur along strike from Cobra towards BVB are all within 200 metres of the contact of the western outcropping contact of the Willie Granite. So virtually all of the emerald deposits/showings in this area are located within a very short distance of the Willie Granite and in particular, focussed on the "nodal" location at GEM.

This work then suggests that the main area to concentrate emerald exploration is the nodal area of the Willie Granite and in particular the Cobra/Discovery areas as outlined in this document and further the Cobra Far North area. This must also strongly support the concept that emerald mineralisation will continue at depth and at the same tenor throughout the Cobra-Discovery nexus for as long as the late stage hydrothermals passed through and up the GEM structural avenue.

7.2.2. THE SELATI SALIENT

The salient appears to provide a semi-linear, structural disruptive contact zone, up to 1000 metres wide, between the southwestern extremity of the Willie Granite and the 3Ga Makhutswi Gneiss located just to the east and south of GEM. As such, it is possible that the salient area has provided a linear conduit directing the Be-rich upper-granitic fluids that created the Discovery and Cobra emerald mineralisation. The salient is completely filled with MF unit rocks.

Robb and Robb (1979) have postulated that the post-kinematic Mashishimala granite (which intrudes the cratonic granite to the south and east of the salient), may have been responsible for generating a late-stage magma enriched in beryllium and other non-compatibles, which permeated the local terrain and produced pegmatitic deposits containing corundum, tantalite-columbite, beryl-emerald and molybdenum at several different localities (Robb and Robb, 1979). However, this granite is some distance from GEM (about 25 km) and is unlikely to have been the source for these emeralds. It has been postulated that the thin suite of aplites, etc which intrude the western Cobra pit may have been part of this event but this is also unlikely.

The rocks of the salient can however, be followed to the southeast, crossing the Selati River, to the farm Thankerton where it connects with a set of very large blocks of talc-actinolite schists with some serpentine, amphibolite and quartzite (Batchelor, 2005).

The salient is host to a number of emerald showings of which the old Selati Mine, 1500 metres east of Discovery on the farm Willie, was the largest and contributed to the Cobra production prior to 1985.

This series of small emerald showings have a geology not dissimilar from that of the Cobra Pit, in that mineralisation appears to be focussed on reaction zones in contact with silicic boudins.

The east west strike of the salient is at considerable odds with that of the Cobra pits but very similar to that of Discovery, indicating a common structural interference must be present. This structural nodal point has not been accurately defined as yet but the presence of a thrust was suggested (as noted above) by J. Langlands, or an overturning event to account for the dramatic change of strike. An answer to this structural dilemma may have a significant role to play in the understanding of the GEM mineralising events.

Batchelor et al (2005) noted "The impression from the map is that a blunt wedge has been driven into a previously coherent packet of sedimentary and volcanic rocks. "This impression is correct, and the wedge is the intrusion by part of the Willie Granite and the Lekkersmaak"..."This idea of a granite intrusion acting as a wedge may seem strange, as one would expect the granites intruded in the molten state and would therefore not have the required mechanical strength to force though solid rock. The fact is, however, that granitic magmas can be extremely viscous, particularly when they are close to their 'freezing' temperature, so that the concept of the 'wedge' is possible".

The salient is now included in the Selati Game Reserve and is not available for prospection.

7.2.3. GRANITIC ROCKS OF THE GERMANIA HILL COMPLEX

Table 7 above shows the approximate ages of the granites in the area with respect to the Archaean basement, the Mulati Formation host at GEM, the possible age of the mineralisation event at GEM, and the only age dating being from the so-called Discovery Granite collected at Discovery and dated by Poujol (2021) at circa 3Ga.

It seems likely that if the mineralising event is correct at 2.83Ga (+/-3mil), then the most likely contender for the source granite is the Willie Granite. Not only is the Willie the most substantial S-type granitic intrusive in close proximity to GEM (less than 500 metres east of the two pits), but the 2nd largest emerald deposit at BVB, some 12 km to the northeast, also occurs within 500 metres west of the intrusive contact with the Willie. The 12 km between the two deposits are studded with abandoned minor excavations (presumably for emeralds but also for gold).

Furthermore, the emerald mineralisation along the 500 metre wide Selati Salient lodged between the Archaean Makhutswi Basement Gneiss (outcropping just south and south east of GEM and the western contact with the Willie) occupies the same location vis a vis the BVB further to the east. It appears that the available geological evidence supports the late stage hydrothermal event associated with the Willie as the most likely contender for source of beryllium for GEM. This fits in with a younger fluidal event moving into the older, pre-existing Mulati ultra-mafic schists.

Discussion and Conclusions

Although the occurrence of biotite in granite is common at all times of the crust history, the occurrence of muscovite is uncommon at these early times. This mineral highlights the high Al and K content of the magma that is a link to a crustal fusion of sediments (e.g. Zen, 1988). In the modern Earth, this only happens during continental collision (S-type plutons). In the MGB area, a series of mid-Archaean events record a sort of "proto-collision". Structural data (detailed in Gapais et al., this volume, see LOR), show that the belt accreted in a sinistral transpressive regime, with top to the south movement.

The mine area is located within a suite of mainly metamorphic rocks of the Mulati Formation sandwiched between resistant granitic intrusions located on the south western flank of the Willie Granite to the immediate east of the mine area, the older Lekkersmaak Granite, a little further to the east and south east and the 1 km^2 outcrop of the Quarry Granite. The Quarry Granite has never been dated and as the largest, and closest, coherent granitic body to the Cobra/Discovery mineralisation, apart from the Willie and Lekkersmaak to the east, would have probably been present during the emerald-mineralising period for the property.

The Quarry Granite (QG) is a very weathered coarse grained granite with more physical affinities with the Willie further to the east than any others on the property. Nevertheless, it is an important, if only geographical, element of the Germania complex.

It is possible that the presence of the Willie on the east and the Quarry on the west, provided important structural "blocks" which in some way facilitated the creation of the disparate strikes of the Cobra and Discovery zones. They may have also provided dilational channel ways for beryllium-rich fluids to move into the area between the two granites (together with the numbers of pegmatites and pegmatoids) and thus provide access to these fluids to the meta-volcanics.

It is noteworthy that both the Willie and the Quarry bodies weather negatively under local conditions. Quite a different situation from the granitic EBG and WBG at Cobra which together provide the resistant positive weathering environment which have created the Germania Hills.

7.3. GEOLOGY OF THE MINED AREA

Due to the various different and largely incompatible maps available, at various scales up to 1/500, by various authors at different dates, a rigorous and definitive analysis of the complex geology of the property has not been attempted. As noted above (Section 7.2.1), there is no detailed geological plan available for either the Cobra or Discovery pits.

However, Whitecross in his 1993 MSc thesis provided a detailed geological plan of the two Cobra pits, a draft paper copy of which was located in the mine offices. Unfortunately, ACA Howe has not been able to access the original thesis at the University of Natal (Figure 8, Figure 9 and Figure 10). This would be the only detailed geological study to be made of the Cobra pits that has survived thus ACA Howe has had to rely on various mine office notes, that have survived. There is no similar geological text or plan available for Discovery, or for the other emerald target areas, although a few untitled paper

plans have survived. It would be an effort to convert these paper plans to a digital format but it could be done.

The mined area (Figure 6) extends over approximately 1 km² and is focussed on the intersection of the Cobra north-south structural trend with the east-west Discovery trend at the intersection of a regional granite-greenstone contact and the east-southeast to southeast-trending Selati Salient of the MF schists. The talcose mafic and ultramafic schists form a complex outcrop pattern defined by the two structural trends and the north northeast-trending, steep-sided granite bodies. The flanks of the complex, believed by J. Langlands to be an easterly-trending synform, are composed of quartzites and quartz mica schists which postdate the MF meta-volcanic schists (J. Langlands) that occur at Cobra and further to the east and of the mine workings.

However, ACA Howe has found an old paper copy of a detailed working geological plan/sketch dating from the early 80's created by S. J. Whitecross, a geologist working at the mine at that time. This sketch is the only geological information currently known to ACA Howe of the Cobra Pit as it was at the time (Figure 8, Figure 9 and Figure 10).

It appears that Mr. Whitecross made use of a version of this sketch in his M.Sc. thesis entitled "Whitecross S. J., 1993. The Geology of the Gravelotte Emerald Mine, North Eastern Transvaal. MSc (Geology) thesis at the University of Natal, South Africa". R. Spencer however has seen a copy provided by a private source and notes that the text provided details with the emerald and gold mineralisation undertaken by Golden Dumps. No formal accompanying plans have been located.

In any case, an effort should be made to digitise the paper plan for inclusion in the 2023 model if only to create a more accurate geological plan of the Cobra pit, one that could go some way to interface with the extensive historic drilling that took place in and around the pit at this time. It is also recommended that the flooded 10 Level at Cobra be drained and the exposed level be mapped and sampled in detail to add to the geological knowledge of this deposit.

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Figure 8: Geological map by Whitecross (1980s) - Cobra North

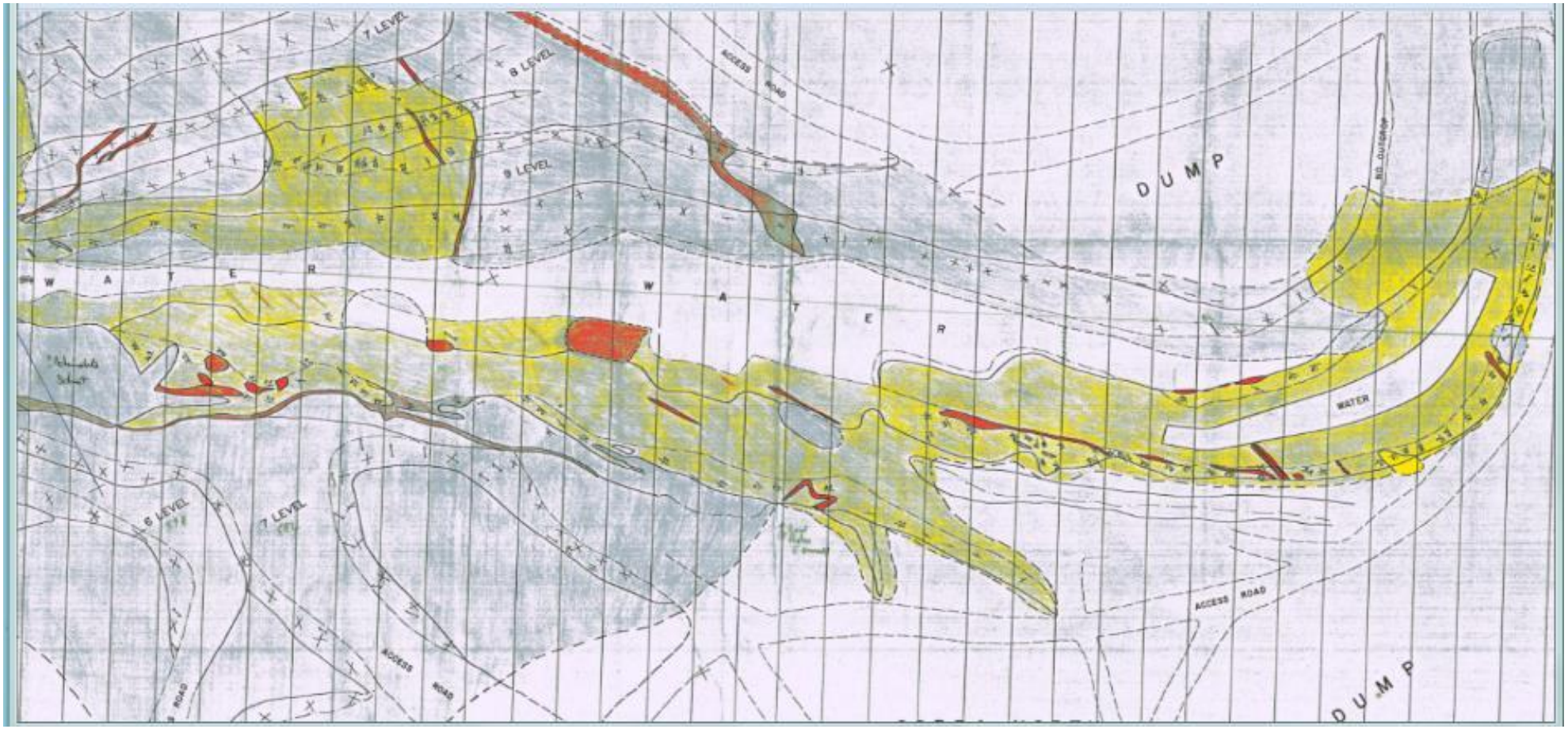

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Figure 9: Geological map by Whitecross (1980s) - Cobra Central

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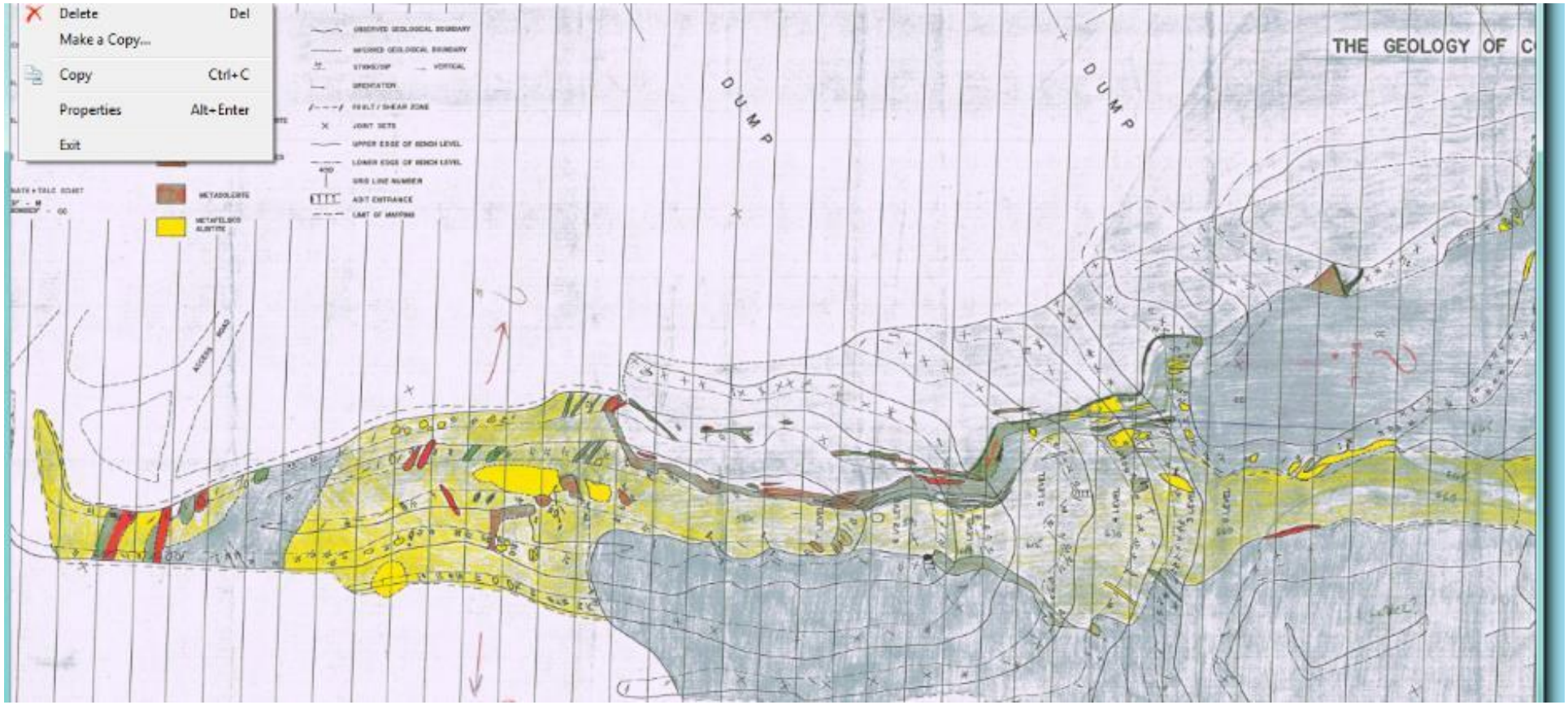
Figure 10: Geological map by Whitecross (1980s) - Cobra South



The short 5 day mapping programme by SRK Consulting in 2016 provided some detail on the geology of both pits. However, it only covered about 2000 x 50-150 metres of exposed geology at the two pits and is by no means complete.

The emerald-bearing zones and their sub-divisions identified by ACA Howe for the Cobra and Discovery pits, are named as follows and are located on Figure 6.

Cobra

- Cobra North
- Cobra Main Reef
- Cobra North Reef
- Cobra Nine Reef
- Cobra Far North and Cobra Deep
- Cobra Underground
- Cobra South

Discovery

- Discovery Pit
- Discovery South
- Discovery Hill
- Discovery West & Far West (W & FW)
- Discovery W & FW to Cobra South
- Discovery North

Beryl Kop

- Beryl Kop East
- Beryl Kop West

Sable Kop

7.3.1. EMERALD-BEARING ZONES AT COBRA AND DISCOVERY

As is the case with all geology for the Cobra and Discovery pits, ACA Howe has no knowledge of the detailed geology for the three pits, apart from the old paper copy of Whitecross noted previously (Figure 8, Figure 9 and Figure 10).

The Cobra mineralised zone is divided into two sections, the first, Cobra North, from the north of the top of Cobra Hill (at 570N) to the base on Level 9 and northwards to approximately the location of the "Hockey Stick" at 1010N (approximately 450 metres). The second (Cobra South) is located south from the top of Cobra Hill onto the flattish base area (close to the western extent of the Discovery Pit) at about 250N (Figure 6).

The main target at Cobra is at depth, at Cobra North, is below 9 and 10 levels, further north from Cobra North (Cobra Far North) and at Cobra South, below 7 Level. Levels are shown on Figure 11 below.

Cobra North

At Cobra North, mineralisation has been shown by Magnum to extend well beyond 1010N, which was postulated by ACA Howe in early reports to at least 1300N (the WT traverse). No exploration drilling was attempted to test this until the 21 hole RC programme by Magnum in 2015.

The Cobra North zone of emerald-bearing schists varies from about 20 metres in width on the crown (570N) of Cobra Hill, to 20-30 metres wide at 700N where it is covered by a serious slip which occurred (in April 1986) from the southeast sidewall of Cobra North. The slip had the effect of closing off access to ore above, on and below 9 Level in the area directly below the slip. The slip is still evident from 700N south to the change of slope going up towards the 570N view point.

The emerald-bearing schist appears to widen north from about 850N to 1010N and now along the two RC drill traverses, a width of 70 m at the "Hockey Stick" traverse and perhaps 90 m wide at the Water Tanks (see Section 10).

The large near term production potential of the Cobra deposit, appears at this stage, to be within the Cobra North and South pits themselves. Discussions with several of the geologists/miners who worked at the mine in the 80's, indicate that the largest proportion of good stones (AA & A) in the entire area come from this +-kilometre long linear zone. However, this opinion may be biased by the fact that only a small part of the historic production has come from Discovery or from Cobra South and that the Discovery mineralisation is significantly more widespread than is/was known to be the case at Cobra.

In January 1986, management estimated that there was 5,000 tonnes of ore available on 10 Level at Cobra North. This material was mined out by mid-1986 by Golden Dumps.

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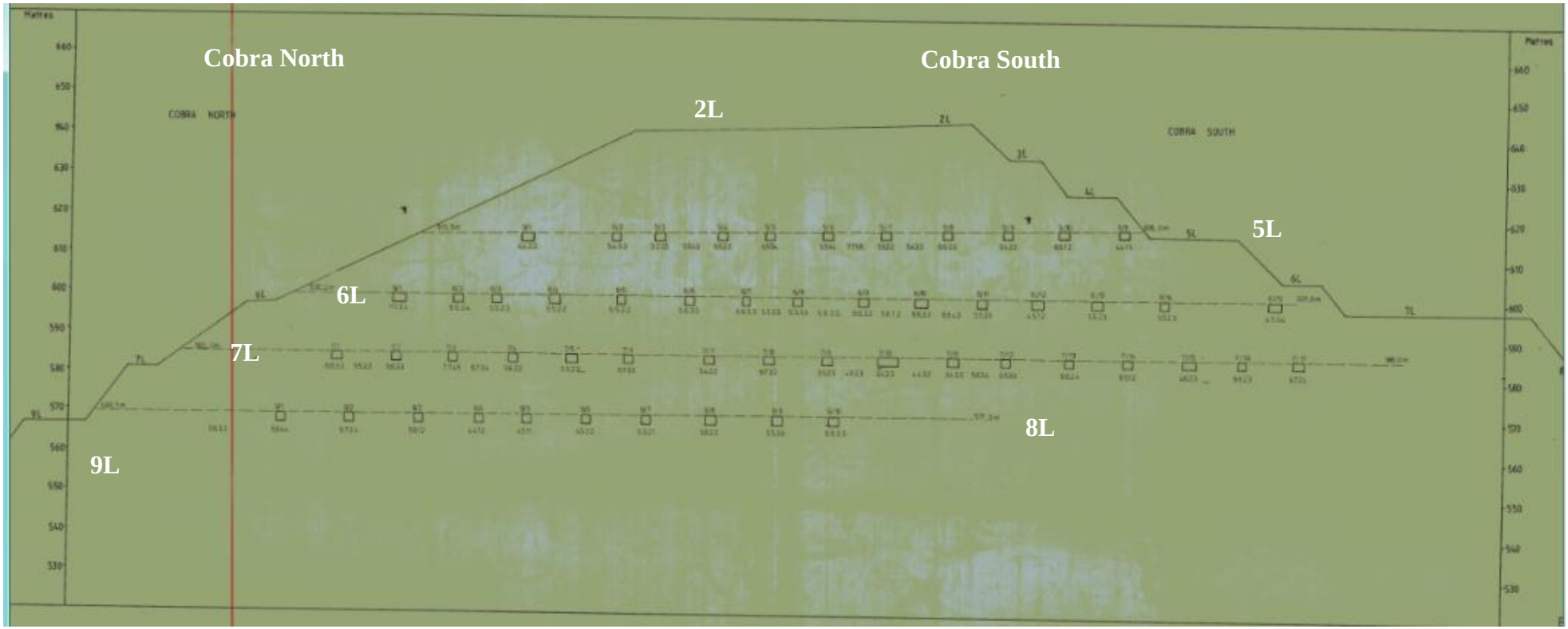
Figure 11: Longitudinal section showing Cobra North and Cobra South



Although ACA Howe had previously estimated a small volume of ore still available above Level 9 (related primarily to the North and 9 Reefs) to the west of the pit, for the purposes of this document ACA Howe have ignored these upper levels as it is likely that these upper areas have been mined in the post mid 80's era.

ACA Howe also notes that north of about 800N, the schist package, and mineralisation, appears to dip eastwards under the EBG at depth. The effect of this feature on the mineralisation here at Cobra North, can only be guessed at this stage.

However, the important issue here is that the Cobra mineralisation appears to dip underneath the eastern granite which bounds the pit face on the east (shown on a number of drill sections), suggesting that at least part of the "bounding" granite does not have deep vertical roots. A local example for the vertical rootless granite wedge can be clearly seen on the eastern side of the Cobra South pit close to the eastern zone of linear mineralisation at 2 Level near 570N (Figure 12).

This further suggests that the area under the EBG to the east of Cobra North is an important exploration target. It also indicates that the relationship between the mineralisation at Beryl and Sable Kops needs to be better understood, especially with regard to any relationship with the Cobra mineralisation and a probable genetic link between all the mineralised zones at Cobra. It is possible that a central mineralising control, such as a hydrothermal "vent/zone" for example, may have been responsible for all of the emerald mineralisation at GEM.

Subject to the successful sampling of 10 Level, ACA Howe is of the opinion that the immediate potential for additional emerald-bearing schist at Cobra North lies in the zone below 9 Level followed by the Cobra Far North section.

Cobra South

From May 1985, mining by Golden Dumps focused on establishing the Cobra South quarry. 448,000 Tonnes of waste was removed between August and September of that year between 2 and 6 Levels to provide 101,000 tonnes of high grade (+5gpt) ore. Stripping down to 8 Level was planned for October of that year but was never completed. According to J. le Cordeur, no mining work was undertaken below 7 Level here. It is doubtful that this work was ever completed. Levels are shown on Figure 13.

In April 1986, MW had reported that "final stripping of 20,000 tons to expose the emerald-bearing zone between 6.5 and 7 Levels was completed." This exposed 25 metres of emerald-bearing schist. This work followed a note by management to the board in September 1985, in which it was stated that "*detailed analysis of exploration results, historical data and underground sampling results disclosed that the major future ore reserve potential was in the Cobra South area*" and "*it was decided to cease all other mining operations as of 1 May, 1985 and concentrate on establishing the Cobra South quarry*".

Figure 12: Photo showing rootless granite apophyses/dykes (yellow outlines)

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Figure 13: Cobra South face levels (and Beryl Kop)

The information on which this decision was made is no longer available but ACA Howe assumes the effort of stripping a total of 480,000 tonnes of waste over a 6 month period to expose the ore-zone down to 6 Level from 2 Level by the end of September was deemed to be worthwhile with the waste stripping cost of R1.14/tonne current at the time.

In January 1986, it was reported that a high grade zone existed between 6 1/2 and 7 Levels and 60,000 tonnes of overburden of a target 360,000 tonnes (to expose 8,000 tonnes of ore) had been removed to access this material. Stripping of another 20,000 tonnes of waste was completed by the end of April 1986 as note above. The May monthly report further notes that "further stripping operations were curtailed pending bulk sampling results". As mining operations ceased in mid 1986, it is inferred that Golden Dumps never mined below 7 Level. Information from workers at GEM in the 1980's and from the review of existing documents suggests that, at Cobra South, mineralisation above about 7 Level, was effectively exhausted by about mid 1986.

At Cobra South, mineralisation extends linearly from Section 570N (at the top of the hill) southwards to about Section 370N (mainly on and close to the eastern face of the pit in contact with the EBG) where it is truncated by the east-west Discovery structure. A single report from mid 1986 suggests that the mineralisation was traced down to Level 10 by drilling. The distance from 7 to 10 Levels, approximately 3-3.5 levels, or +40 metres below 7 Level, down to about 560-565m asl (also the approximate elevation of the surrounding plain). At this time, there is no reason why mineralisation will not continue below Level 10 here. Although ACA Howe cannot confirm this from the data that has been recovered, it appears that emerald mineralisation continues down below 7 Level to at least Level 10 here.

Relative elevations are important to consider at this stage because it is very much easier, and cheaper to tunnel through granite than it is through schist and if URA is envisaging underground development into Cobra North/South from the surface, it will be far easier to do this from granite portals at ground level. Level 9 is at 575 metres above sea level and 10 Level is +15 metres below this whilst the general elevation of the plain away from the open pits, is at about 560-565 metres.

Discovery – Cobra South

In this area immediately adjacent to the east-west trending Discovery mineralisation, the relationship between the north-south Cobra zone and Discovery is quite unclear and needs to be better understood as it is possibly a very important emerald target. The Cobra South mineralisation, certainly in the upper sections of the exposure seems to be similar to that at Cobra North with emerald being concentrated on the eastern side of the linear talc schist zone close to the margins of the granite in this locality.
Whereas, at Discovery, only a matter of 150 metres away from the Cobra South mineralisation, there is a 90^{o} change in strike direction, of the emerald-bearing schists. Clearly, there is a significant structure involved here.

There is approximately 250 metres of poorly prospected ground close to the base of the hill at 7 Level (585m asl) south and downhill to the ground level of the Discovery West area at 600m asl. The talc

schist zone here ranges from 20-60 metres in width widening to the south with the mineralised zone estimated to be of the order of about 10-20 metres wide and apparently concentrated on the eastern flank of the Cobra South pit. This area needs to be trenched, mapped and sampled to investigate the continuity between the Cobra South and Discovery mineralised packages.

SRK do not believe that there is a physical connection between the Cobra and the Discovery mineralisation zones. ACA Howe does not agree with this opinion and considers that further work is required in this area.

Discovery Pit

As noted earlier, there are no formal geological plans available for either the Discovery Pit or any of its sub-areas. The creation of a detailed geological plan using available data is an important target for URA.

It appears that the main production from inception in the Cobra area came from the Cobra North/Beryl zone, originally from the open cut first developed at the top of Beryl Hill and then on to what is now the Levels 1 and 2 view site at Cobra North. Development only much later moved onto Discovery East where outcropping emerald-bearing schist was found to exist on 1 and 2 Levels at that location. The June 1983 mine report notes that at that time, "Discovery had only produced 4.3% of all production" and that the Discovery baseline was also only put in at that time.

We have little or no information for the Discovery pit pre-1980, but it is likely that prior to that time emeralds were being produced here only in very limited quantities and then only from the upper couple of levels of the pit. Certainly, there is no evidence of significant emerald production pre the 2nd World War. However, percussion drilling on the north side of the pit on levels 1, 3 and 4 was carried out in May 1981 and showed the existence of pockets of emerald especially on 1 Level.

The Discovery emerald ore zone occupies the southern part of the Germania Koppie complex of outcropping talcose schist and various granitic and felsic bodies. The geographic intersection of the two structural trends (north-south and east-west) of the area can be clearly seen (Figure 6). However, the actual physical (on ground) geological intersection of the two trends has been obscured by talus and debris from earlier mining episodes. However the east-west trend is obviously dominant and the Discovery mineralisation zone extends, and is open, in all strike directions and down-dip. Dips vary in the pit from 45 to 70^{o} to the south with the steepest dips in the west and the shallowest in the east. It is also clear that the Discovery deposit has been influenced structurally by the Selati Salient feature described above.

It appears though, that the major limiting historical issue which affected the development of the Discovery area was its proximity to the so-called "Southern Marais Claims" (owned by W. Marais) located just south of the present quarry, at the apex of the Discovery Hill. The GEM management historically were unable to reach agreement with the owner of those claims to either work or in any way gain access to their claim area on Discovery Hill. The Marais Claims were replaced by W. Marais's inheritors (Lorraine Hardie) via the 2005 Venus Emerald application.

However, the immediate structural controls here are likely to be the probable thrust contact between the MF schists and the intruding Willie Granite. This may have provided a favourable channel way for hydrothermal fluids to move from the granite contact into a zone made up of chemically receptive talcose ultramafic schists below and carbonate-chlorite-talc schists above and a zone of pegmatoids, felsic intrusives and quartz-rich schists, all of which may have been available to the Be-rich fluids. It is plausible that the mineralising fluids that introduced the beryl and emerald into the entire GEM area may have had their immediate geographic (and granitic) source in the Willie Granite apex (nodal) area in the Beryl/Sable Kop areas just east of the Cobra North/South open pits (and north of the Discovery East area) as suggested elsewhere in this document.

Golden Dumps closed down emerald operations at Discovery in December 1984. The discovery of gold mineralisation prompted new development work and drilling at about that time in the pit, continued in and around the open pit up to 1986. This gold work seems to have resulted in the identification of many earlier emerald-focussed wagon and core drill holes, many of which do indeed pre-date 1980. Anecdotally, Golden Dumps also undertook a programme of deep, mainly inclined northward core drilling, from various locations in the Discovery pit at the behest of a member of the Pouroulis family. A direct result of the inclined core drilling programme noted above, has been the identification of widespread emerald mineralisation existing well away from the boudin targets and has proved valuable in understanding the widespread nature of this pervasive micro fracture-associated (MFR) emerald mineralisation as noted previously. This work resulted in the detailed analysis of drill core for both emerald/beryl and for gold.

ACA Howe's earlier drill hole digitisation project for Magnum (2016) did not include as much drill section information as had been available for Cobra North. However, a sufficient number of sections were acquired to attempt a first pass attempt at interpreting these sections. The results of this post 2016 work has enabled ACA Howe now to recognise the importance of the fracture-related stye of mineralisation for the first time at Discovery. At Discovery, in 2016 ACA Howe was able to digitise data from 34 of the potential 50 by 10 metre spaced sections for the 1st pass modelling undertaken at that time. The set of 34 summary drill sections was from Section 11E in the west to 43E in the far east of the quarry (all drilled in 1983-1986). Additional unscanned copies of sections from 4 to 11E, and from 43 to 47E, have been found on site (2022) but have not been included in the present modelling project as they have not yet been digitised.

The remaining Golden Dumps data also appeared to be showing significant near-surface ore remaining on and just below the southern face and bottom of the 400 metre long Discovery open pit. This mineralisation has been further enhanced, but not quantified, by core and percussion drilling undertaken during the mine life, down dip and well below the current pit bottom. The mineralisation appears to extend from about 11E to 25E. However, Magnum did not confirm whether this material had been robbed by the previous management as was the case at Cobra.

Thus, Discovery mineralisation is not only restricted to the proximity to the blackwall contact zones (as at Cobra) but is also concentrated in pervasive fracture systems (the MFR). No grade or quality

information is available for the emerald/beryl located in the core holes. This widespread MFR emerald mineralisation is now known from drill intersections to extend from Level 1 to at least as deep as the equivalent of 14 Level in this area, i.e. to about 500m asl. As a result of the Golden Dumps core drilling and emerald analyses noted above, it appears that Discovery also has a good potential for providing a number of areas where the wide-spread MFR form of mineralisation occurs at relatively near surface locations in the form of emerald-bearing schist. In his earlier capacity as consultant to Magnum, R. Spencer had alerted the company to the presence and potential importance of these widespread fracture-related mineralisation in 2015/16.

The emerald-bearing schists in the west, centre and east of the pit may extend to the same depth as the deepest intersection in the west at the 512m level (perhaps even as deep as a hypothetical 14 Level as at Cobra North), a vertical maximum distance of up to 150 metres. The extensive (10's of metres along strike) near surface intersections may also persist with depth. There appears to be good scope to firstly locate a number of bulk sampling sites and for the drill definition here of substantial tonnages more than have been identified in any of the previous resource estimates.

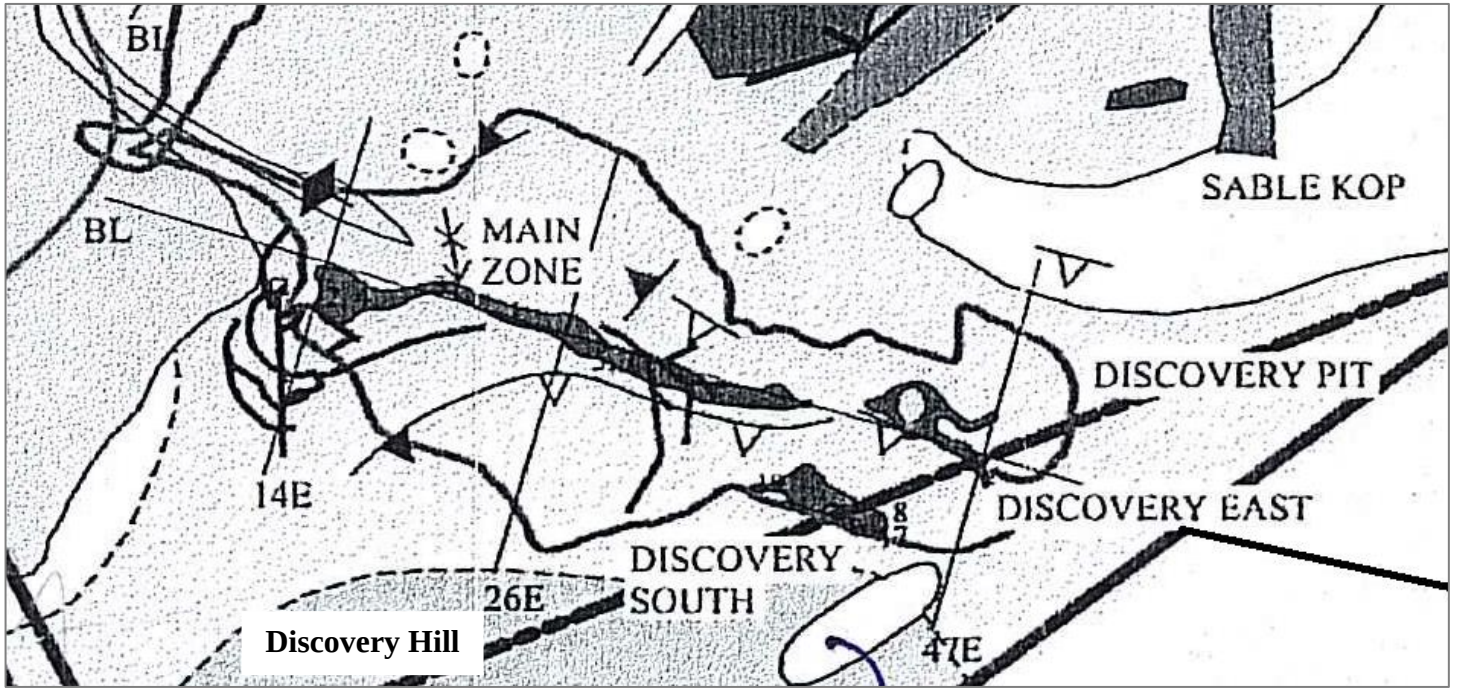
Underground Development

Previous management created a short underground adit system in the east of the main pit, at 612m asl, at the top of the 5 Level bench on section line 27.5E, just north of the baseline. The development was a reaction to the results of an emerald review by Golden Dumps in 1984 and driven eastwards to intersect an emerald wagon drill anomaly about 100 metres from the portal. Only a total of 220 metres of underground development was created and certainly from the only 31/12/1986 plan that we have found, it does not seem that much ore was recovered as a result of this work. The adit system was portaled in MFR schist.

By early 1985, exposed ore above 4 Level on the north side of the pit had been exhausted and only a limited amount of ore was available on the south side against the Marais boundary. It appears that prior to August 1984, production from the pit occurred primarily from benches on the 5 and 6 Levels. Levels 3-6 on the north side of the pit (opposite the Marais claims) had not been maintained and waste stripping neglected. By early 1985, production at Discovery basically ceased and a decision was made to focus on Cobra South. The option of underground gold mining at Discovery was being investigated at this time. At the end of 1985, management were reporting reserves of 175,000 tonnes of emerald ore at a grade of +5g/t down to 30 metres from the surface, mainly from the Main Zone. However to access this ore, approximately 700,000 tonnes of waste stripping was required on 5-6 Levels to expose new ore on both sides of the pit. Additionally, the benches on the south side of the pit at all levels appear to be too narrow for safe mining. In May 1985, instructions were being given to strip surplus existing equipment operation-wide for spares, major maintenance schedules were stopped and extensive theft of emeralds was identified as an issue.

A note in the September 1985 Progress Report says that benches on levels 3-6 on the north side of the pit had not been maintained at the time of the takeover (August 1985) and that by the end of 1984, emerald mining in the Discovery open pit had been terminated.

Figure 14: Discovery pit plan



See Figure 24 for the location of the boundary of the Mining Right in relation to the eastern side of the Discovery pit.

It should be noted that, Rozolor, a company set up by Scott Huntly and Dave Richards during the LP Hill time, submitted a PL application to the DMR over an area immediately around the existing GEM mining licence and part of this application which covered a small area east and south of the open pit as it was in 2013. The application had not been fully processed at the DMR (R. Spencer, 2015) because of the presence of a previously conflicting and unknown/reported PL made by Venus Emeralds. URA is currently investigating the status of this application and awaiting the processing of the Section 11 document (Transference) by the DMR in order to be able to access the information. If this licence application is actually current, then it will be immediately east of the Discovery Pit and the area south of the "Marais Claims" and east of the eastern Cobra entry road.

A short structural mapping programme was completed at the Discovery pit by SRK Consulting. However, field observations by J. Langlands of ACA Howe had previously suggested that many of the pegmatoidal pods at Discovery may be boudins with a steep southwesterly plunge. The Discovery South mineralisation located in the eastern part of the Discovery deposit seems, on the basis of drilling results, to plunge in this direction. It is possible that the pegmatoids which introduced the beryllium to the chromium-bearing magnesian schists are oriented parallel to the lineation formed by the interference of the steep, northerly-dipping axial fold planes of the Murchison Schist Belt proper and the southward dipping later fold axial planes of the Selati Salient (SS) cross-fold at a plunge culmination.

In the 1980's, seven vertical diamond drill holes spaced 25m apart were put down along a north-south line just west of the Discovery Pit. Emeralds were found in the three northern holes.

East of the pit, five vertical and angle holes have been drilled along a north-south line and, in conjunction with a considerable amount of percussion drilling, proved apparent ore grade intersections to the south of the pit on each side of the security fence have been reported. These drill holes have not as yet been identified on the ground.

There has been no drilling to prove mineralised ground exposed in the pit floor until this programme started in 1983. ACA Howe has not been able to locate these 12 holes either on the ground or in the database.

Discovery East

Golden Dumps had extended the Discovery baseline for some 170 metres beyond the pit boundary and further onto the SS. There is no record of any exploration being undertaken in this area thus there is a possibly significant strike length of unexplored strike east of Discovery East at least to the Willie/Farrell boundary.

However, as this area (Discovery East) may be included in the "Rozolor" PL noted above, the area has not been included in the Exploration Targets outlined in this report.

Discovery West

There are some 150 metres of strike unexplored west of the Main open pit to the southern tip of the Cobra South pit.

There is also a 500 m long airborne magnetic low which trends from the above location north and north northwest behind the dumps west of Discovery towards the entrance road. This feature needs further investigation.

Discovery Hill

- Discovery Hill is a 14 – 18 ha north west facing hill slope crowned by a large white quartz/silica outcrop at an elevation of about 675m asl
- It is known that MF talc schist outcrops over the entire hill slope below the silica deposit.
- Historically, and until the early 2000's, the hill slope was covered by a claim owned by Mr. W. Marais (who would not deal with Golden Dumps, in the companies attempts to acquire the claim to allow for the southern extension of the Discovery pit). The claim area is now included within the GEM property.
- Previous miners at Discovery had found emeralds directly below the Discovery Hill quartz outcrop in trenches and angled drill holes from the Discovery side (see DDH41 on Section 35E). DDH41 was collared 9 metres north of the Marais boundary and drilled at 50^{o} southwards. The 65m long hole entered Marais space at the equivalent of Level 2 and immediately recovered mineralization for about 9 metres down hole from 638m asl to 625m asl, the equivalent of Level 3 at Discovery. No information on this prospecting work is now available but the hill slope is clearly prospective for emeralds.
- The prospective areas south and west of the Discovery Hill covers an area of 14-18 ha between the southern and eastern boundaries of the (tenement Figure 6) with the Selati Game Reserve.
- See Plan 1032: "Discovery Quarry. All Exploration Drilling from June 1980 – May 1986", in the mine archives.

7.3.2. BERYL – COBRA DEEP ZONE CONCEPT

The two granites (WBG) and (EBG) that occur in 3 dimensions at the crest of the Cobra Hill both appear to taper vertically from Level 1 (at the crest of the hill to zero width close to the Level 2 saddle located between Cobra South and North. This suggests that these, and possibly other of the smaller granites in the mine complex area do not have significant (or varying), depth extents) but perhaps exist more in the horizontal (or inclined) plane.

The concept is presented that all of the Cobra North and South, Discovery, Beryl, and Sable Kop mineralised zones may be linked at depth (perhaps at about the 12 Level (about 520, asl) and only 30-40 metres below the present plain surface at 550-560m asl.

7.4. MINERALISATION AT GEM

7.4.1. MINERALOGY

The emerald mineralisation at Cobra/GEM is often (but not exclusively) located in biotite/phlogopite-rich alteration zone or selvages (known as "blackwall") developed around quartz-feldspar boudins that are related to the late stage S-type granitic intrusions of one of the several Archean granites (most probably the Willie) that are found in the general area of the GEM Property. Another important form of mineralisation occurrence at Discovery and probably at Cobra as well, are the single or clusters of emerald crystals (presumably following micro-fractures or other dilational openings well away from boudins or pegmatoids) often found on the waste dumps and which may be examples of the so-called MFR zones more fully described previously.

These clusters are usually elongate, but sometimes disjointed and dislocated (but otherwise unharmed) and simply follow the schistosity and sometimes also replace other suitable minerals such as actinolite. These elongate crystals, up to 6 cm in length and 5 mm in total width, often exhibit well-formed prismatic and hexagonal crystal forms. The crystals often appear to have been gently dislocated at right angles across the long axis but are otherwise unharmed.

The dislocation event may be a reflection of a gentle shearing movement (such as what may occur in either regional or local schistosity events) and would possibly imply the existence of already formed emerald crystals in rocks that are then subjected to gentle shearing, or possibly a mineralising event coeval with regional metamorphism,

The net effect of the dislocation though has often been to reduce the size of some of the larger crystals to a series of near identical but much shorter, individual crystals. It does appear though that this is evidence of relatively gentle post emerald formation, movement (perhaps the thrusting event suggested for the formation of the Selati Salient) and if so, indicates that the thrusting event was happening close to the time when the emeralds were being formed.

There is currently no indication that the Cobra fluids came from either the Eastern or Western Bounding Granites (EBG or WBG) at Cobra. However, the EBG does contain often significant amounts of molybdenite (absent from the WBG) and centimetre size crystals of phenakite similar to those that have been found in the Willie Granite just east of the pits (R. Spencer). This indicates that both the EBG and the Willie have had the ability to carry Be (and emerald?) further supporting the view that both granites were involved in the formation of the GEM emerald deposit.

The general mineralisation regime however is consistent with late stage reactive siliceous and alumina-rich warm acidic fluids emanating from nearby, high level S-type granites.

The following extract from the CPR summary report by SRK Consulting (2015) on the Kagem deposit currently describes the multiple mineralising environments that occur at Kagem (presently the largest

single emerald mine in the world) illustrating the fact that emerald deposits can indeed manifest several different forms of mineralisation at the same time.

"Emerald mineralisation in the Kafubu area, including the Kagem deposits, belongs to a group referred to as "schist-hosted emeralds", relating to the interaction of Be-bearing fluids relating to pegmatoid dykes or granitic rocks, with Cr-rich mafic and ultramafic schists or weakly metamorphosed ultramafic rocks. At the Mine, emerald mineralisation is hosted by with three main styles of mineralisation recognised:

- Discordant reaction zone material adjacent to the pegmatite and quartz-tourmaline vein contacts.
- Concordant reaction zone material concentrated along the footwall and rarely the hangingwall contacts of the TMS unit.
- Discordant reaction zones hosted by brittle structures within the TMS unit distal to the pegmatite and quartz-tourmaline veins."

It may be that the third of these styles noted above (the "discordant reaction zones"), are similar in origin to the MFR mineralisation as has been noted at Discovery.

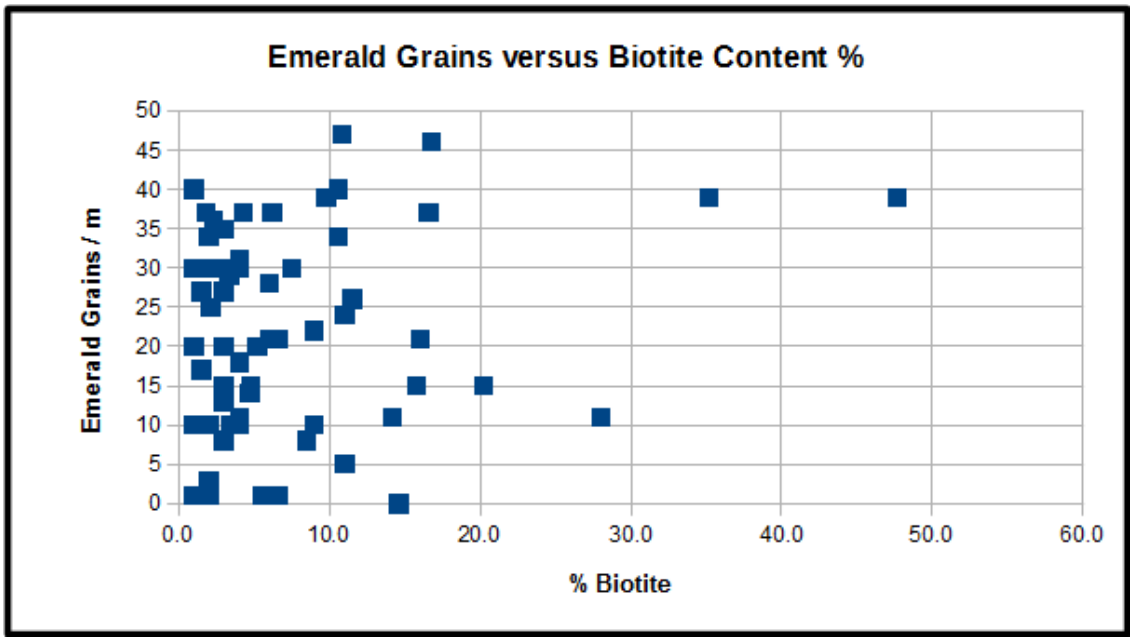
7.4.2. THE BIOTITE – PHLOGOPITE CONUNDRUM

The observed emerald distribution on the property and mirrored in the literature (e.g. Grundmann and Morteani, 1989), is that the emerald content is directly related to the biotite content of the schists. The early Cobra pit wagon drill logs (WDC series) included biotite percentages generally in 10% increments and length-weighted biotite contents (biotite % x emerald-bearing metre) were calculated to test this empirical correlation. A simple plot of emerald grains per emerald mineralised metre against metre weighted % biotite (n=73) showed this but more clearly it also shows that the actual biotite content need not be greater than say 5%, i.e. the emerald host rock would probably not be immediately classified as a biotite schist but rather a biotite-bearing schist. Greater emerald grain contents do tend to correlate with higher biotite contents (i.e. biotite schists), as shown in Figure 15 below. This simple graph was created by A. Phillips of ACA Howe in 2016, and illustrates an interesting point relevant to the biotite conundrum. That is, that the emerald grains appear to correlate with biotite content only up to about 15-17% biotite content. The data in the graph is derived from 69 emerald grains compared with variable amounts of biotite-bearing schist. It appears that 42 (61%) of the emerald grains actually occur in schists with less than 10% visible biotite (see Fig, 13).

This suggests that there is not necessarily always a direct correlation between emerald and biotite host rock, perhaps there is 'biotite' and biotite? The results of the mineralogical MSc that was created by Ms Coffin in 2015, suggests that phlogopite may be a more important emerald indicator mineral than has previously considered.

These percentages need to be better defined in any future work (in tandem perhaps with geochemical analyses), on account of their possible use in delineating potential mineralised zones. The Discovery drill data was not similarly investigated due to apparent inconsistencies in grain counts. Though this disparity was also observed by ACA Howe in the Cobra pit data, only one set of data was used.

Figure 15: Analysis showing the correlation between emerald grains and biotite content



The literature repeatedly mentions the role that biotite plays in identifying potentially emerald-bearing rocks from others. The observed emerald distribution at GEM and mirrored in the literature (e.g. Grundmann and Morteani, 1989) is that the emerald content is directly related to the biotite content of the schists. The Cobra pit (WDC Series) wagon drill logs gave biotite percentages generally in 10% increments and length weighted biotite contents (biotite % x emerald-bearing 'm') were calculated to test this empirical correlation. The ACA Howe 2016 plot of emerald grains per emerald mineralised metre against metre weighted % biotite (n=73) illustrates this (Figure 15). But more clearly it also shows that the actual biotite content need not be greater than say 15-17%, (and could be significantly less) i.e. the 'average' emerald host rock would probably not be immediately classified as a biotite schist but rather a biotite/phlogopite-bearing schist. Larger emerald grain contents do tend to correlate with higher schists containing biotite/phlogopite contents, as shown in Figure 15 above but only within the <17% level.

As far as GEM is concerned, this feature basically holds true but only as far as the perceived higher-grade targets that the early miners chased. Biotite, or "blackwall" as it is also known, certainly develops around many of the quartz and quartz feldspar boudins that became the miners primary underground targets at Cobra and Discovery from 1929 to 2001. Many of the reacted and potentially mineralised biotite encased boudins were too large to be easily broken or crushed and are still lying scattered within the dumps located around the pits.

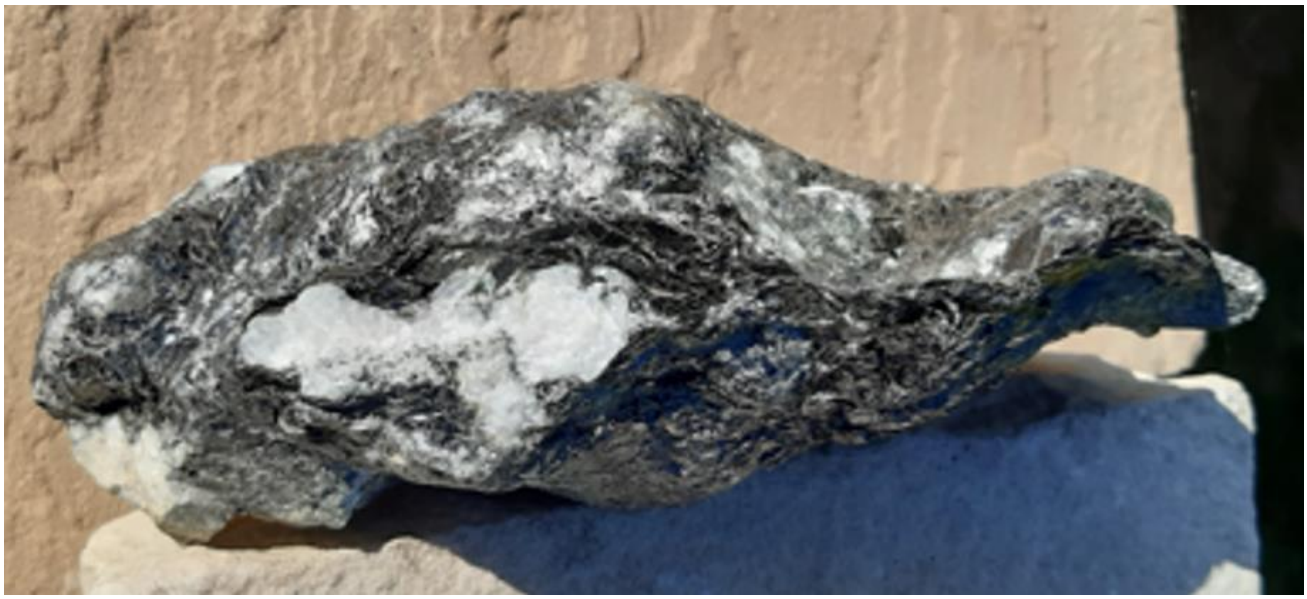


Figure 16: Hand specimen of biotite schist encasing quartz/feldspar boudin (12x4 cm)

However, black coloured biotite is the Fe-rich end member of a solid solution series of biotite on the one hand and the brassy coloured Fe-free, but Mg-rich other end member, phlogopite, on the other. Phlogopite occurs as shades of brown to golden colours. Figure 15 from the ACA Howe 2016 draft CPR, also illustrates an interesting property observed in the ACA Howe analyses of 'biotites' from the mine.

Biotite is the end member of the biotite-phlogopite micaceous series and differs from phlogopite by the relative amounts of Fe and Mg. Biotite contains significant Fe in its crystal lattice and is black in colour, in particular in the 'blackwall' zones (where the biotite is present as a reacted selvage) whilst phlogopite has no Fe.

Although the Cobra ore often does show higher grade emerald associated with "black" biotite (especially with the black selvages around the boudins) many of the inclusions particularly reported in the Coffin (2015) study, have been identified as phlogopite. This is a feature that is similar to that at Sandawana where the emerald ore is closely associated with phlogopite-actinolite schists and not biotite. Describing this non-boudin/selvage form of mineralisation, L. Contat, Mine Manager in the early 1980's (and one of the original discoverers of the Sandawana mine) noted the following when speaking about mineralisation at Discovery:

" ….. emerald mineralisation were encountered *at* Discovery Quarry. 'These' are very narrow zones of mineralisation and appear to be associated with *linear* fracture zones leading off pegmatite bodies. Mineralisation persists for more than 20 metres in some cases. The mineralisation associated with the highly discontinuous North Reef also appears to be largely controlled by fracture/shear and expansion crack planes. Preliminary investigation on Cobra South 2/0 and 3/0 levels suggest both of the above mentioned modes of emplacement".

Contat was certainly not describing the regular ‘black wall-type’ mineralisation. In fact, the mine geologist in the early 80’s, geologist Tom Hannay, reported finding emerald replacing actinolite in schist on the upper Discovery benches.

ACA Howe located a brief mention in one of rare mine research records that do survive. This work took place on-site into the chemistry of boudins or ‘felsics’ as they were also called. Apparently mine workers in the early 80’s, studied numbers of boudins (53) from both pits at GEM. A number of the boudins studied, showed a positive correlation for emerald content when these were analysed for K and Na. A K/Na2O ratio of +10 strongly indicated the presence of emeralds (and beryl?) in the rocks analysed. It was suggested that this ratio could be used to differentiate mineralised boudins from barren examples. There is no mention of whether any further work was conducted on this concept. The quote describing this work taken from a mine mangers report, describes the findings and is included below:

“53 samples of felsic intrusives were taken in and around Discovery quarry and were checked for various elements including sodium and potassium. A model was tested whereby the association of emerald mineralisation was compared with a sodium to potassium ratio. It appears as though a Na2O/K2) ratio of more than 10 correlates highly with emerald mineralisation although there are obvious exceptions to this trend.”

In summary, it does appear that there exists at Discovery (and very likely at Cobra as well), a type of emerald mineralisation whose significance has not been hitherto assessed. This ‘style’ is a widespread form of mineralisation, quite distinct from the blackwall/boudin style which was the main target during the 80’s. This may be similar to SRK’s “discordant reaction zones” at Kagem that makes up a large proportion of the resources at the largest emerald mine in the world!

7.4.3. ACADEMIC STUDIES

Microprobe analysis by Robb and Robb (1986) showed that the green colour of the Cobra Mine emeralds is directly proportional to chromium content and unrelated to iron content which remained relatively evenly distributed in the two crystals analysed. The important issue here is the reference to two crystals, which may be too small a sample size on which to draw any conclusions.

Sevdermish and Mashiah (1995) noted that emeralds from South Africa, were deep green in colour, have a high RI of 1.593-1.606 and a high SG of 2.75. They also note that “the most characteristic inclusions are brown leaflets of mica which, when great in number, can significantly affect the colour and optical properties of the stone”. Grundmann and Morteani (1989) suggest that tectonic rotation of the emerald crystals has taken place as the biotite inclusions in the emeralds have different orientations to those in the enclosing schist.

In order to commence a mineralogical study of the GEM emeralds, Magnum allowed Ms. N. Coffin to undertake a review of the emerald/green beryl minerals located on the long abandoned sorting tables in the Cobra Pit for an MSc thesis at Camborne School of Mines. A set of stones from the mine site were provided to her. These emerald crystals (some of them were greenish beryl) were collected from

the GEM sorting table at Cobra Pit but did not include any top quality stones. The thesis was completed in 2014/5 and is included in the references to this document. An important conclusion of the work was the recognition of phlogopite (previously described as biotite?) as inclusions in several of the emerald crystals that she studied. A summary of the thesis conclusions is provided in Section 9.7.

7.4.4. EMPIRICAL STUDIES (ACA HOWE)

In 2016, ACA Howe analysed differing aspects of +1.5 mm diameter sieved emerald and beryl grain counts from 1.5 metre long exploration wagon drill hole samples drilled in the Cobra (108 holes) and Discovery (180 holes) pits during the period 9th June 1983 to 19th April 1985. ACA Howe noted that the percentage of emerald grains falling into pale, medium and good green colours were 57%, 35% and 8% respectively. These grain data splits are shown in Table 9. The stone codes used at the mine are those described in Section 6.

Table 9: Wagon drill emerald colour grain counts

Location	Pale	Medium	Good	Totals
Cobra RC Grain Count	2,065	1,354	301	3,720
Cobra RC Grain Count %	55.5 %	36.4 %	8.1 %	100.0 %
Discovery RC Grain Count	808	404	79	1,291
Discovery RC Grain Count %	62.6 %	31.3 %	6.1 %	100.0 %
Total RC Grain Count	2,875	1,758	380	5,011
Total RC Grain Count %	57.3 %	35.1 %	7.6 %	100.0 %

The fact that the emeralds and beryl have extremely nuggety distributions (i.e. have markedly log-normally distributed populations) is shown by the effect of the removal of the emerald grain counts of the two best mineralised boreholes from each of the two pit areas. This has the overall effect of changing the percentages of emerald grains falling into pale, medium and good colours to 65%, 31% and 4% respectively. The exercise noted above was also designed to determine the proportion of emerald grains relative to beryl grains from 2,076 m of wagon drilling in the Cobra pit. This exercise showed that emerald grains were recorded as being more common than beryl grains in the ratio of 1.48 emerald grains to 1 beryl grain with a strong tendency for the grain counts to increase sympathetically (n=65). However, it is unclear whether ‘beryl’ means coloured beryl or white beryl, or both. It does, however, suggest that when coloured, or white beryl grains occur in samples, it is possible that emerald will occur in close proximity to the sample.

7.4.5. MAGNUM STUDIES

Magnum (2015) undertook a very preliminary geochemical investigation on a number of rock samples from Cobra pits in an attempt to replicate the Kagem work noted above. This work was undertaken by SRK on behalf of Magnum. Seven schist samples (and a single dolerite sample) were analysed for a range of elements using a hand-held analyser. The results were apparently encouraging in that it appears that there may be a suite of elements, or combinations thereof, that could assist in identifying rocks which have the potential to be emerald-bearing, at least in hand specimen. Magnum's results are available on the mine site (Table 10).

Table 10: Portable XRF Trial Analysis COBRA vs KAGEM (ppm)

Element	Cobra - mica (+/- talc) schist samples		Kagem (Gemfields)	
	No visible emeralds (average of 50 analyses)	Visible emeralds (average of 12 analyses)	Talc mica schist	Reaction zone
Zn	114	94	1,208	5,443
Sr	37	31	135	201
RB	707	1,010	96	530
V	325	280	236	255
Cr	2,100	1,467	2,125	914
K	4,944	6,831	5,710	17,354
Ni	1,363	1,035		
Mo	207	85		
Zr	32	62		

7.4.6. MICRO FRACTURE RELATED MINERALISATION

The ACA Howe analyses of the historic drill hole emerald and beryl intersections at the Discovery Pit between sections 11E to 43E has shown extensive continuous and semi-continuous down-hole, and linear (from section to section), mineralisation of both emerald and beryl with no obvious associations with boudins. This style of mineralisation is quite different from the traditional and historical style which emphasised the association of emeralds with 'black-wall' reaction zones of mica-phlogopite schists encasing boudins and other felsic bodies. These reaction zones were the focus of both exploration and production at GEM from the start of mining in the late 1920's. There is little mention in any of the surviving texts from the mine (apart from 1 or 2 odd notes by workers) of this linear style of mineralisation, and it is unlikely that without the advantage of the ACA Howe digitisation exercise in 2015, that this style would have been recognised.

Table 12 below is a summary of 22 core and wagon drill holes drilled vertically (and inclined up to 60o, mainly in a northerly direction), from the northern and southern side of the pit targeting the MF metavolcanics which host the surface and near surface mineralisation in and around the pit.

Table 11: Drill holes at Discovery with extensive down-hole mineralisation		
Section Number	**Hole Number**	**Vertical Intersection (m)**
11	132 & 133	100
12	124	75
13	127	48
15	129	55
17	130	60
19	131	60
21	148	30
23	146	35
24	10	55
25	143	65
27	141	60
29	138	53
	139	67
32	68	30 (vertical WDD hole)
34	58	30 (vertical WDD hole)
35	57	30 (vertical WDD hole)
	48	20 (vertical WDD hole)
	40	35
38	150	30
41	147	50
43	145	60

These holes clearly show the extent of the hole to hole continuity (and section to section) that appears to occur throughout the drill package that is available to ACA Howe. Figure 17, Figure 18 and Figure 19 illustrate the semi continuous mineralisation in these three holes that is typical at Discovery.

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Figure 17: Discovery cross section 11E (Cape datum)

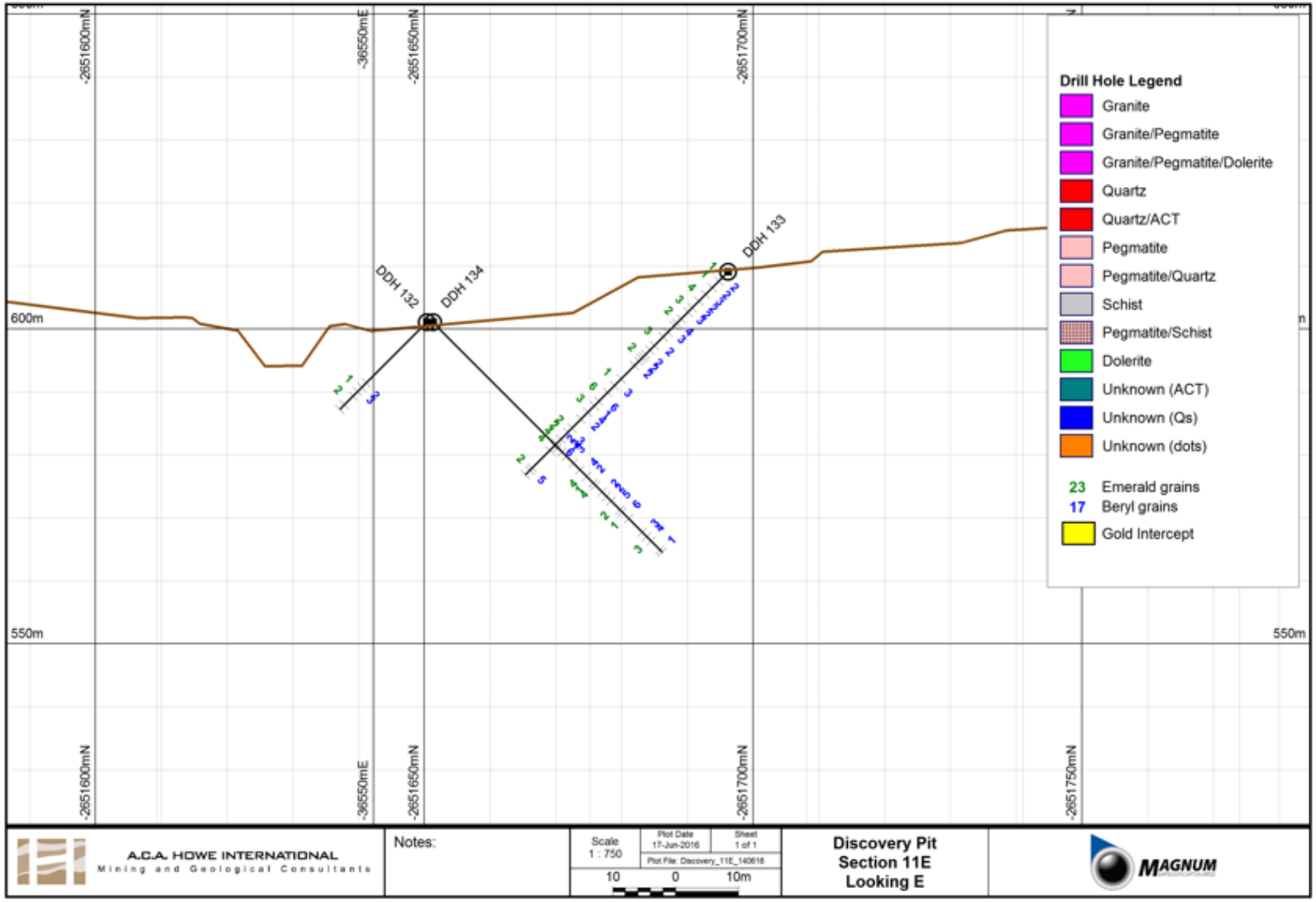

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Figure 18: Discovery cross section 15E (Cape datum)

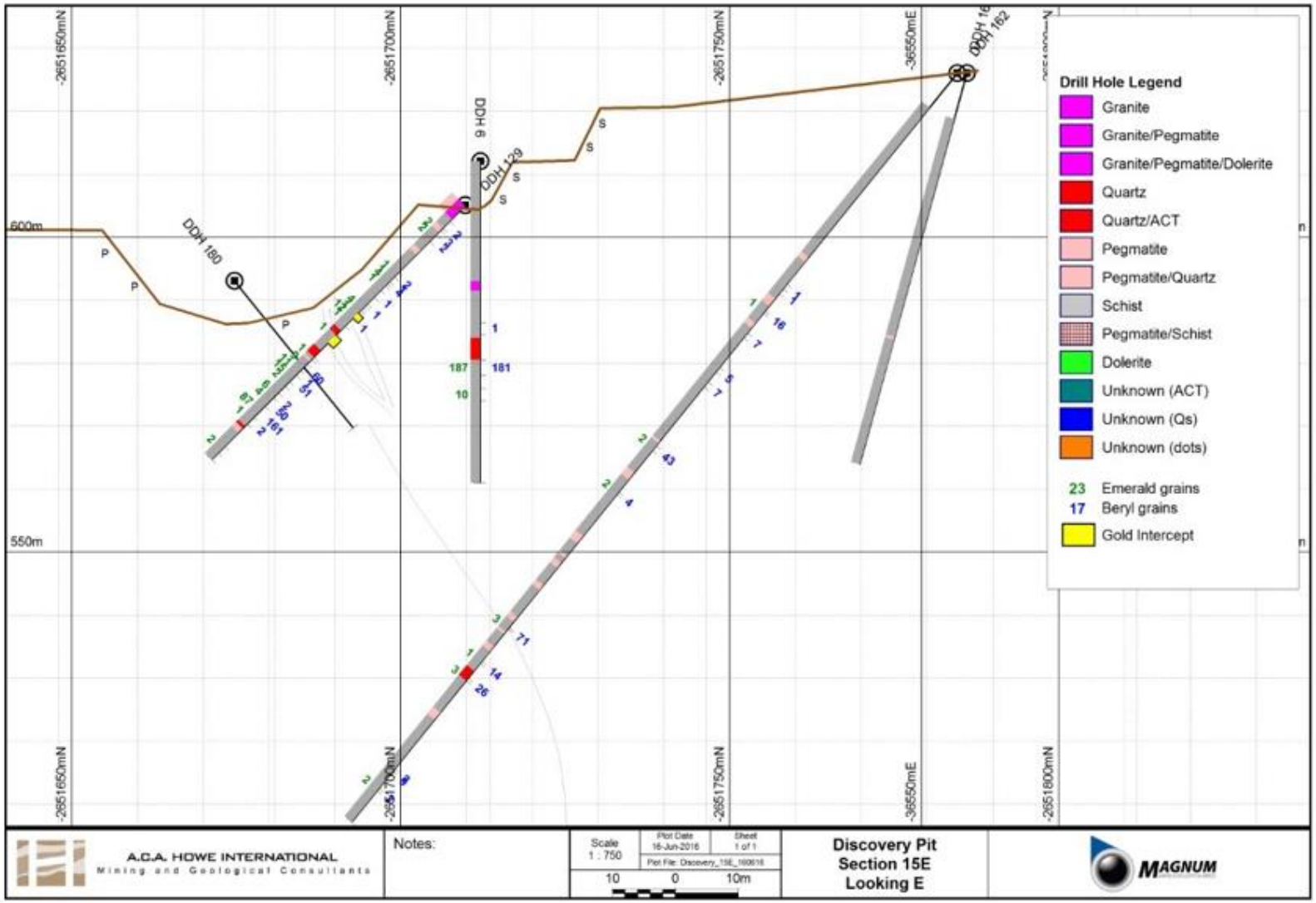

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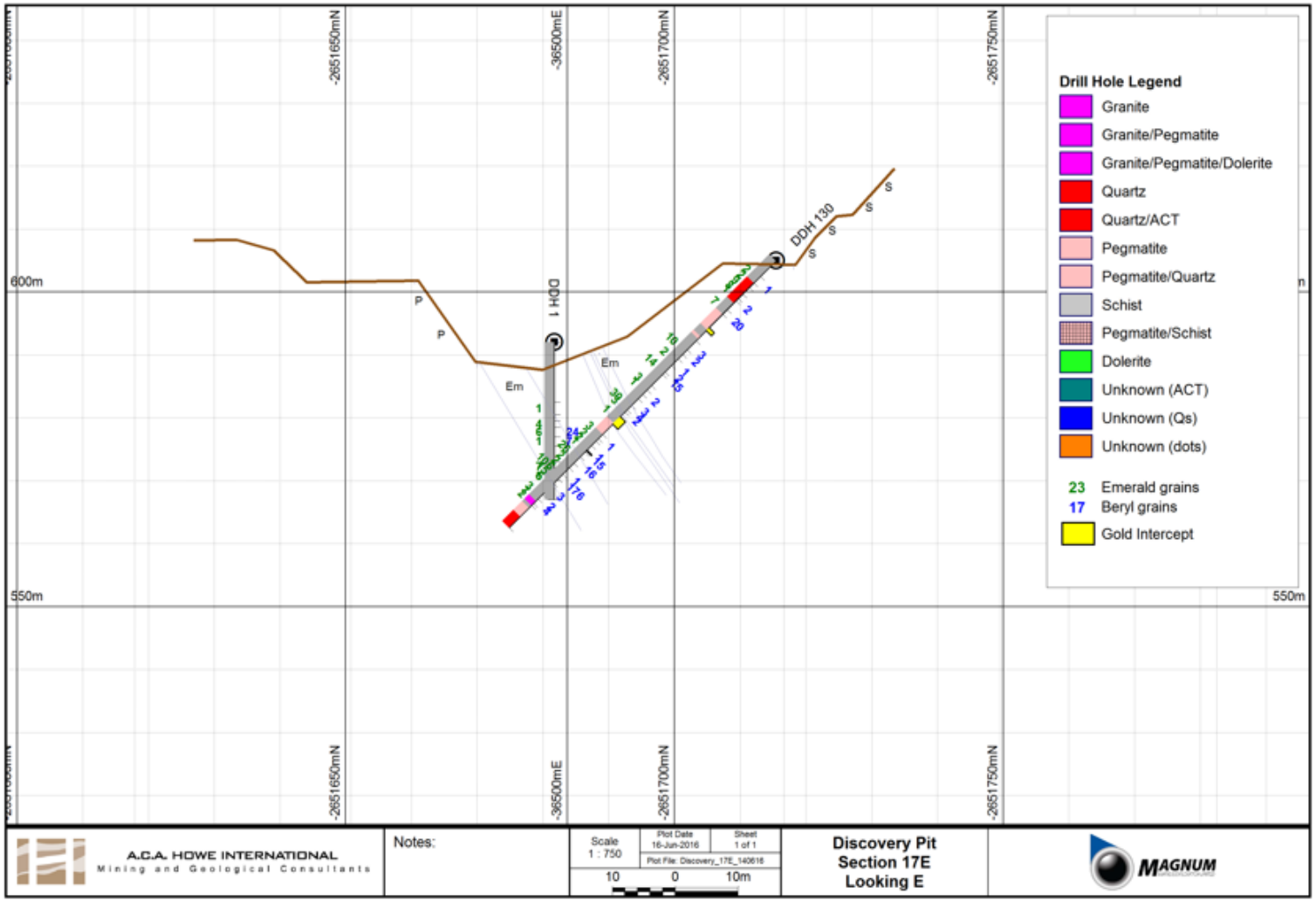
Figure 19: Discovery cross section 17E (Cape datum)



It is not possible to state unequivocally whether this type of pervasive micro-fracture related (MFR) type of mineralisation is accompanied by similar 'black-wall' reaction zones as exist for the 'boudin' style but this is likely to be the case. The fact remains that this MFR style is horizontally continuous across the length of the pit up to 300 metres, from west to east (following strike) and at right angles to the strike ie. north to south, for in some places 10's of metres. In the opinion of the author, this disposition of mineralisation can only be achieved structurally through imposed sheets of micro fractures (hence the notation 'MFR'), that are very suggestive of the "discordant rection style" of mineralisation as interpreted at Kagem in Zambia (Figure 20) that seems to develop in 'waves' out from a local source (in this case the proposed contact between the Willie and the SS structure, see Figure 6). As at Kagem, this style of pervasive mineralisation has the potential to contribute significantly to GEM's emerald and beryl inventory at the Property.

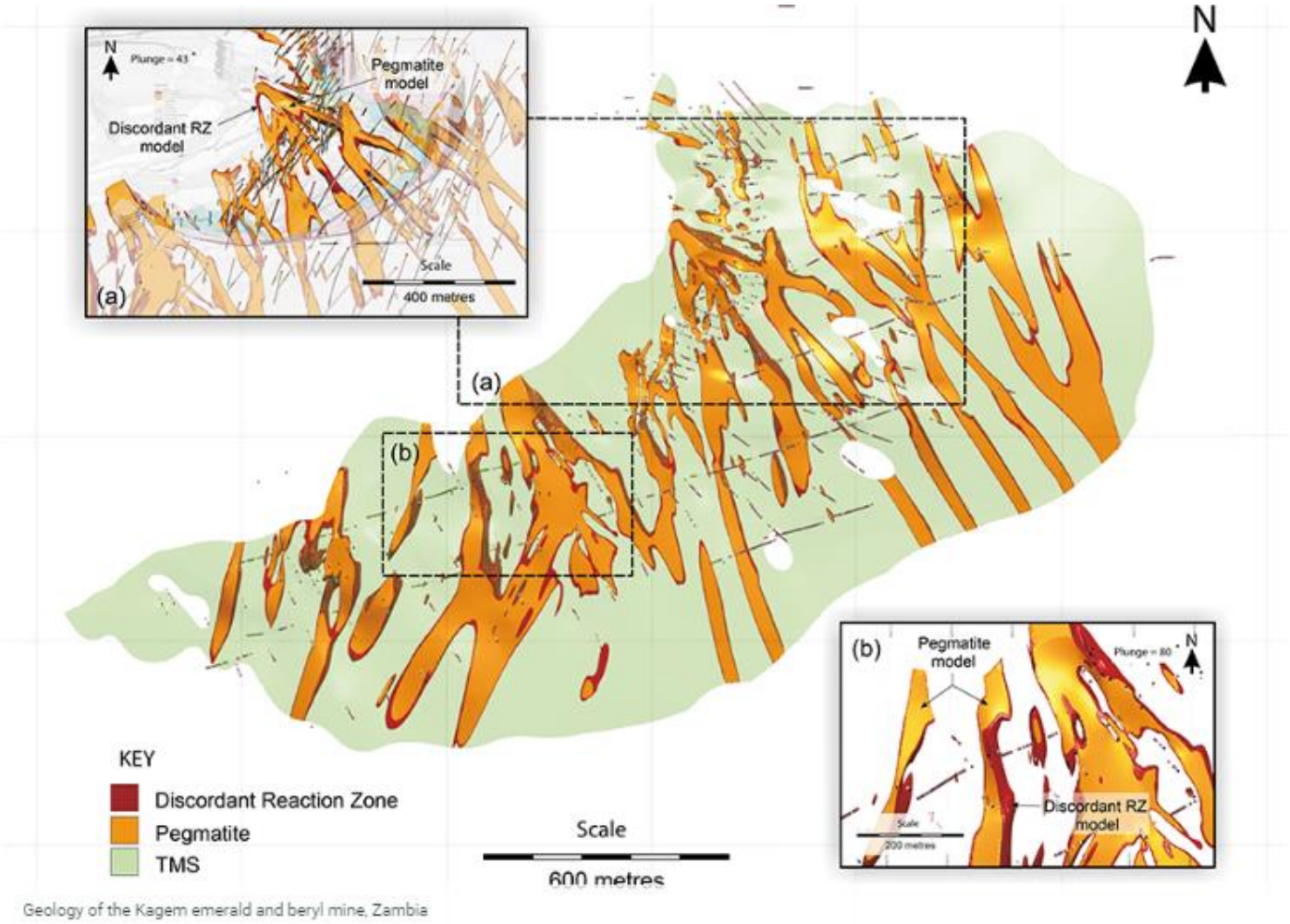
The only other similar style of emerald mineralisation known to the author is at the Ianapera Deposit in south-central Madagascar where possibly similar mineralisation is described by Andrianjakavah, et al (2009) in this +/- 500my old deposit located in metamorphosed sequences of volcanics and sediments of the Mocambique Belt of the East African Orogeny. This author describes what he calls 'distal' emerald mineralisation in a retrograde metamorphic within a post kinetic regime.

7.4.7. SUMMARY

From the perspective of being able to identify Be-prospective 'boudins' from non-prospective 'felsics', and non-prospective 'biotite' schists from those which have the potential to contain emerald, the forgoing appears to indicate that differentiating felsics on the basis of their K content and 'blackish' biotite/phlogopite schists with modest to higher amounts of Mg at the expense of Fe, has some potential for further research. These findings are provided in Section 7.4.2.

These analyses could possibly be achieved by using handheld XRF (or other) scanners, or even possibly adapting these for use on a slowly moving feed belt.

Figure 20: Postulated pegmatic vs discordant styles of mineralisation at Kagem (SRK Consulting, 2018)



8. DEPOSIT TYPES

The mineral beryl is relatively rare in nature and beryllium itself is not a common element in the upper continental crust. Unusual geologic and geochemical conditions are required for Be and Cr and/or V to combine to form emerald. In the simplistic perceived classic model, Be-bearing pegmatites interact with Cr-bearing ultramafic or mafic rocks and precipitate and/or deposit Be-containing beryls. However, in the Colombian deposits for example, there is no evidence of local magmatic or granitic activity and it has been demonstrated that near surface groundwater circulatory processes within the host black shales were sufficient here to form emerald. In addition, researchers are now also recognising that regional metamorphism and tectono-metamorphic processes such as shear zone formation and apparently, importantly, periods of post kinetic release may play a significant role in the formation of certain emerald deposits.

Groat, et al (2008) and Zwaan (2006) have reviewed the various geological styles of emerald mineralisation. These authors show that emeralds can be formed in very different geological settings, as long as a number of basic conditions are met. In this respect, the following factors are essential:

- Availability of beryllium and chromium & +/- vanadium from various sources, the former usually but not exclusively, introduced from intrusive potassium-rich, often albitised granites (possibly in the form of pegmatites) and the latter, again usually but not exclusively, from pre-existing usually komatiitic and other metamorphic lavas.
- A means and conditions of transport sufficient to bring the elements together, that is, fluids of hydrothermal, metamorphic or a combined origin.
- Conditions in which emerald may form as a stable mineral under suitable chemical conditions with temperatures generally between 300° to 600°C (i. e. lower greenschist facies).
- Sufficient space to grow transparent and well-formed crystals stable at near surface conditions.
- With older deposits, deposition/precipitation/crystallisation requires an environment of extension at the time of formation as is often available during periods of schistosity and boudinaging and late kinetic release.

8.1. HOST ROCK TYPES AND METAMORPHISM

With the exception of the Columbian deposits, most of the deposits around the world, and all of those in Africa (including GEM), are hosted by biotite/phlogopite-rich schists (in one form or another), in a regional low grade greenschist facies metamorphic environment (between 300° and 600°C). The cognomen “biotite or phlogopite” is simply descriptive of the characteristic mineral assemblage that results that can occur when Be-rich, low temperature, precursor and reactive fluids are driven ahead of a temperature/pressure gradient usually created by the upward movement of intrusive granitic bodies.

These fluids can react with Cr/V-rich metavolcanic-derived (usually komatiitic but also amphibole/actinolite-rich) schists to ultimately create emeralds and other types of Be-rich minerals. The resultant black/dark brown coloured biotite or phlogopite host rocks are often called “black wall” rocks.

8.2. REACTION ZONES, GEOCHEMICAL RATIOS AND MINERALOGICAL STYLES

“Reaction zones”, where biotite and/or phlogopite is developed, is a characteristic of many of the emerald deposits world-wide (and these reaction zones in whatever context they appear, either enclosing silicic boudins or elongate around shears) are typical, or perhaps more obvious, hosts of better grade mineralisation in most deposits – except perhaps for the unmetamorphosed Columbian deposits. This is certainly the case at GEM and in Egypt, Zambia, South Africa and Mozambique.

Possibly interesting research on the chemistry of mineralised vs non-mineralised boudins are provided in Section 7.4.2.

9. EXPLORATION BY MAGNUM

No exploration has been completed by URA since the acquisition of the project. The exploration activities described below were completed by Magnum, the former owner of the Property.

9.1. VOLUMETRIC SURVEY

Magnum estimated that approximately 3 million tonnes of emerald ore had been processed through the GEM (Cobra) operation since production began (from all sources available to the plant) and suggested that much of the tailings resultant from this work would still be located in close proximity to the mine workings. During the period from 1977 to 1982, J. Langlands of ACA Howe recorded that some 73,800 tonnes of these tailings, derived from all sources, were processed at the mine for a grade of 6.9gpt, producing 508,400 grams of exported emerald.

During the same 5 year period, 50,000 tonnes of these tails, those derived only from the Cobra and Discovery ore, produced 137,000 grams of exportable emerald at a grade of 2.73g/t. There appears to be at least 10 significantly sized dumps present on the Property.

An independent surveyor (J le Cordeur), has measured four of the largest dumps and provided a figure of approximately 850,000 tonnes of coarse tailings and untreated ore available within 1000 m of the proposed recovery plant site. Most of these tails are already crushed to –30 mm but there are also large boulders present that will have to be broken and crushed prior to processing (le Cordeur, 2015).

9.2. AIRBORNE SURVEYS

9.2.1. SURVEY BY XPOTENTIAL GEOSCIENTIFIC CONSULTING CC

In 2015, Xpotential Geoscientific Consulting CC (Xpotential) were contracted to complete an airborne survey, to provide a first pass interpretation and model the data with the following objectives:

- "Filter and image magnetic and radiometric data to provide a base set of images for further interpretation.
- Provide a structural and fracture map based on detailed heliborne magnetic data – results from this analysis can be used in exploration for pegmatites and hydrogeological applications.
- Identify magnetic domains relating to geological units based on textural detail in magnetic data – in particular identification of (non-magnetic) granite margins.
- Use radiometric data to support domains identified in the magnetic datasets.
- Process radiometric data to highlight areas of potential potassic alteration (e.g. through use of normalised K/Th ratios) associated with pegmatites.
- Model magnetic dykes for mine planning and hydrogeological applications.
- Geological Summary."

Traverses were completed on an azimuth of 330^{o} and covered 297 line km. Results of the survey are as follows (figure numbers herein refer to figures in the text of the Xpotential report):

- "Regional magnetic data, illustrated in Figure 1, highlighted the key geological formations and associated magnetic signature:
    - Highly magnetic east-northeast trending magnetic units associated with the Rooiwater metaigneous complex. The complex includes of gabbro, anorthosites and magnetite (Vearncombe, et al., 1988) all of which are expected to be highly magnetic.
    - Variably magnetic, complex terranes associated with the ultramafic and mafic schists of the La France Formation and quartz pyroclastic schists of the Rubbervale Formation.
    - Dominant, highly magnetic northeast trending anomaly which correlates with mapped iron formations in the La France Formation (Vearncombe, et al., 1988).

- Key local magnetic features are highlighted on a reduced to pole magnetic image (Figure 2) and tilt derivative reduced to pole magnetic image (Figure 3) of the survey data. The outlines of the Discovery and Cobra pits were overlain for reference:

    - Highly magnetic, linear, continuous, folded units interpreted to be associated with mapped iron formations (Vearncombe, et al., 1988).

  - Long-wavelength circular magnetic low interpreted as a weakly magnetic granitic source.
  - Complex folded magnetic units which appear to be associated with mapped amphibolites from local geological maps.
  - Cross-cutting west-northwest trending linear features interpreted to be Karoo age dykes.
  - North-northwest trending weakly magnetic linear features interpreted have an older dyke related causative source.

- Radiometric data (illustrated in Figure 4) provide an effective means of mapping outcropping/sub-cropping geology:
  - Basement granite/gneiss and granites appear characteristically bright in ternary images reflecting their high radioelement content.
  - In contrast mafic-ultramafic dominated schists are characteristically dark in ternary images.
  - Additional radioelement highs may be indicative of granites in the northwest portion of the survey area.
- Notably, the potassium response in the vicinity of the historical mines is elevated vs thorium and uranium (dark red response in the ternary images). Ratio's and potassium composite images were therefore created (Figures 5 and 6). These images clearly highlight the areas of enriched potassium which may be related to K-alteration associated with pegmatites".

Figures 10 and 11 illustrate the structural interpretation on first vertical derivative reduced to pole TMI and residual spectral filtered TMI, respectively. The following relationships are noted:

- "Known emerald mineralisation at the Cobra and Discovery pits broadly follows on open anticlinal structure on the contact of a dismembered magnetic unit. These open structures may represent a preferential site for mineralisation based on vectors discussed in Section 1.
- The southern Discovery pit margin appears to straddle a major, east-west trending structure which may play a primary role in pegmatite emplacement;
- Minor displacements in open folded units are observed on secondary northeast and northwest trending brittle structures. These structures may offset mineralisation and provide an eastern boundary to the southern Discovery pit (which may be displaced westward and continue to the south of the current pit).
- The NE margin of the Cobra pit is bounded by an extensive, relatively continuous, west-northwest trending dyke.
- A smaller fault-bounded, west-northwest trending dyke is observed to the southwest of the southern Discovery pit."

Figure 21 and Figure 22 are ternary potassium composite and potassium composite images produced by Xpotential.

9.2.2. COWAN GEOPHYSICAL ANALYSIS

Magnum also commissioned Cowan Geodata Services of Perth to formally analyse the airborne data that had been collected in 2015. The following is summarised from a report on the work undertaken:

- The biotite schists do not have a clear magnetic signature, suggesting that magnetite destruction has occurred.
- The granitoids also do not have a clear magnetic signature, suggesting that they are ilmenite-series, not magnetite-series.
- The magnetic intensity data are dominated by northeast trending linear and curvilinear anomalies due to Karoo dykes with a relatively subdued response from the areas of interest around the Gravelotte Emerald Mine and the Selati Salient Zone. The Karoo dykes in the north of the area have amplitudes in the range 1000-2500nT whereas anomalies in the vicinity of the Gravelotte Emerald Mine are typically in the range 100-250nT. The highest amplitude anomaly is on the western edge of the survey with amplitudes up to 4200nT, interpreted as a possible BIF or ultramafic fold hinge.
- The biotite schists hosting the emerald deposits do not have a clear magnetic signature so selection of targets based on magnetics is indirect.
- The various magnetic images might suggest that the target zones are a magnetic low. However, the main Cobra zone does appear to be associated with a northeast trending complex magnetic anomaly zone and based on this association, possible extensions of the emerald target zones along strike were selected as targets.
- The biotite schist host rocks have a clear potassium high signature as expected and the radiometric data suggest possible target zones along the Selati Salient Zone.
- The combination of magnetics and radiometrics suggests a number of possible extensions to known emerald deposits (Figure 23).

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Figure 21: Ternary potassium composite image (Xpotential, 2015)

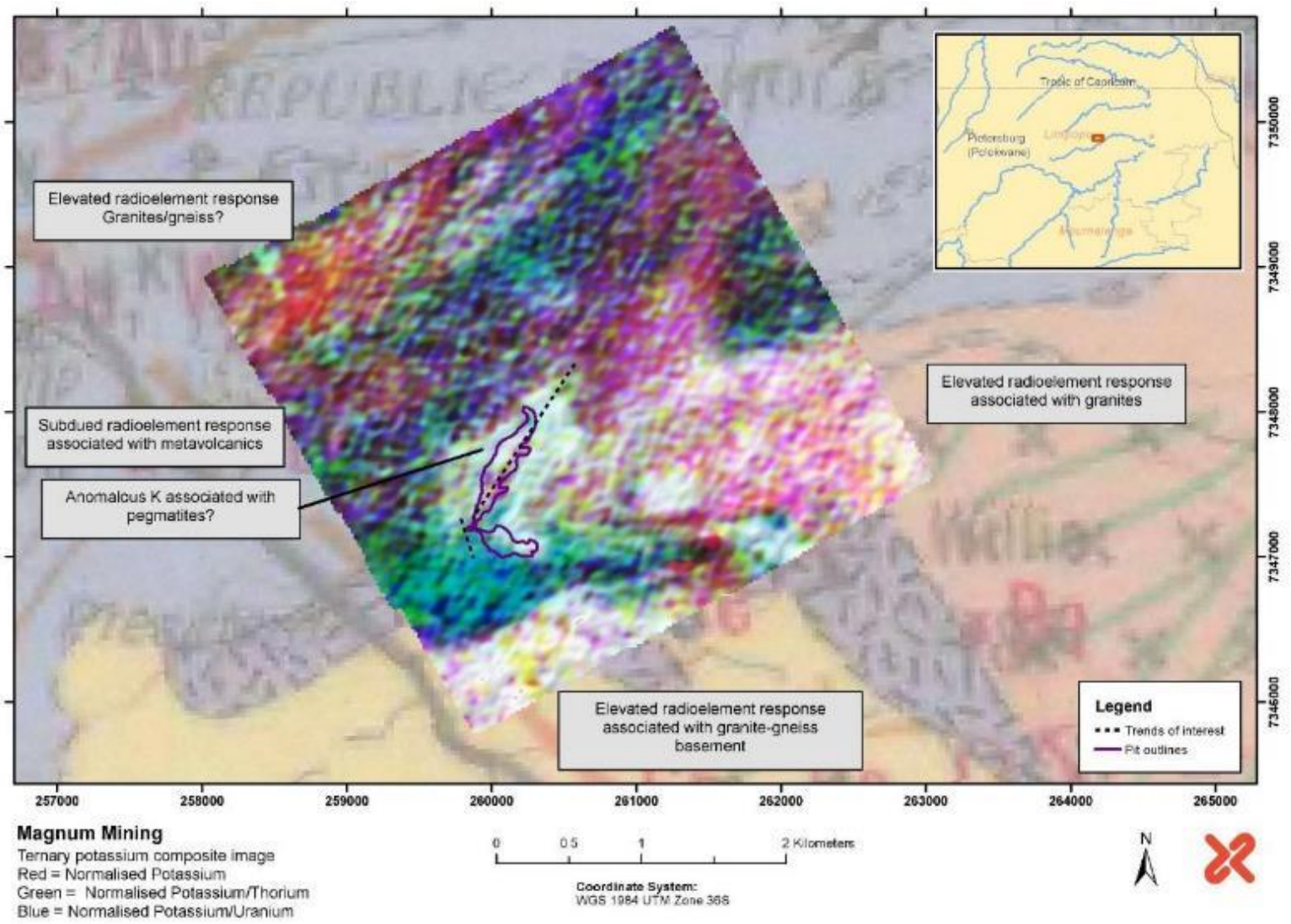

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Figure 22: Potassium composite image (Xpotential, 2015)

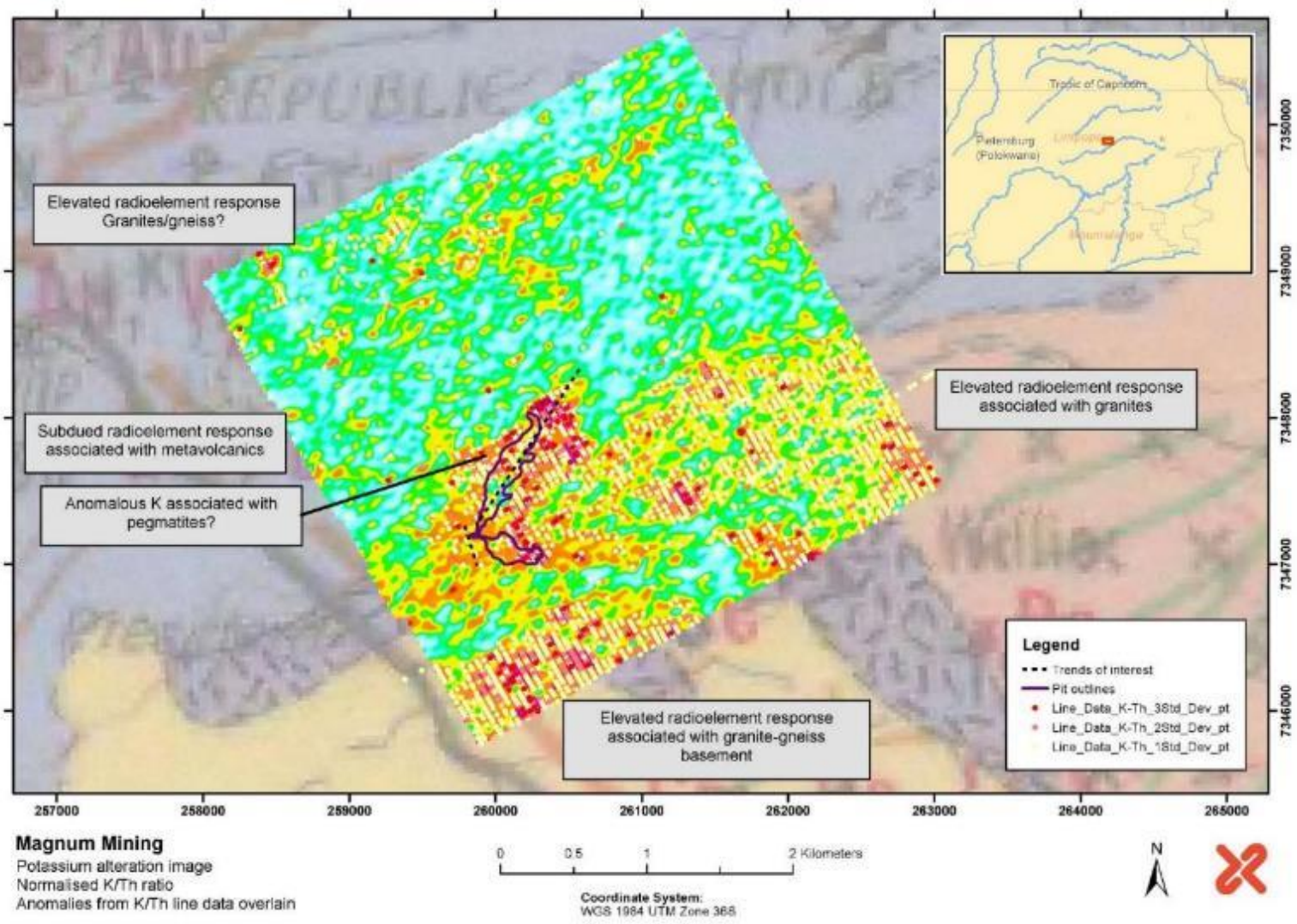

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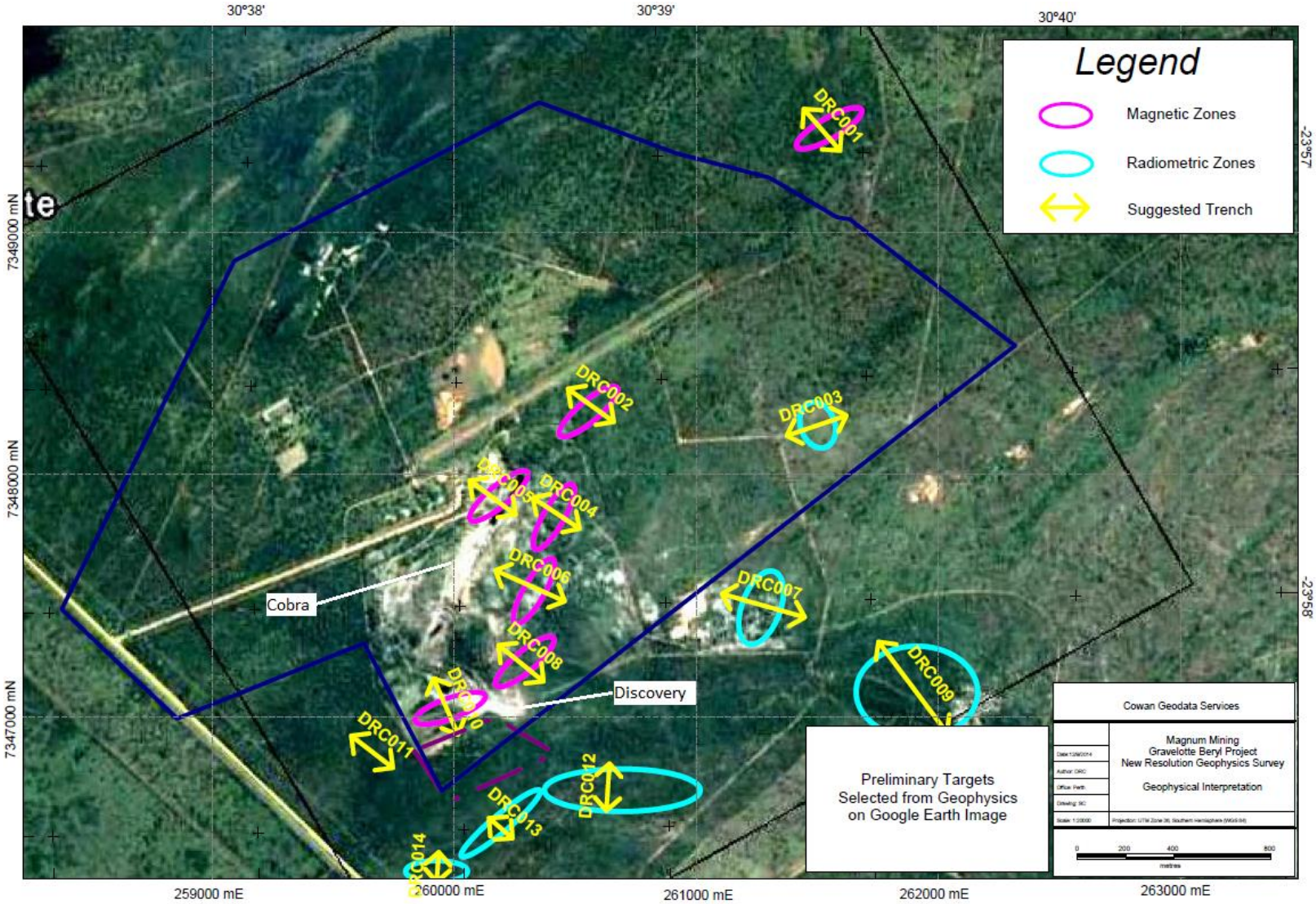
Figure 23: Preliminary target areas (Cowan GeoData Services, 2015)



9.3. PITTING PROGRAMME

A total of some 50 shallow excavator pits were dug across the property in 2015 to assist in a better understanding of the GEM geology (Figure 6). Pits were dug to between 1 and 3 metres deep (average about 1.5 m) and were logged by a geologist. The work produced several significant results such as:

- The extent and outline of the Quarry Granite was identified.
- The presence of reaction (blackwall) mineralisation was identified on the north side of the "Hockey Stick" track and across the Water Tank track and further north along strike.
- The ubiquitous presence of red residual soil profiles across the property was noted.

Further pitting and trenching will require a larger excavator to break through the various duricrusts encountered.

9.4. LIDAR SURVEY

A static LIDAR of both faces of Cobra Pit to facilitate any sampling on these faces was undertaken in 2015. An airborne LIDAR survey covering the pits and surrounding areas (Figure 24) was also utilised by ACA Howe in the construction of the geological model for Cobra and Discovery.

9.5. TAILINGS REHABILITATION

URA will continue to rehabilitate the abandoned gold/emerald slimes/tailings on Farm Willie.

- The total area of the tailings dump is approximately 14ha divided into a western third dominated by 1985+ era gold slimes and the eastern two thirds of old coarse and fine emerald potentially valuable dump material.
- The gold slimes are likely to be the most important target for rehabilitation because of the potential for acidic/metal contaminated drainages.
- The eastern area of emerald tails is likely to be far more benign than the gold slimes and are thus a secondary rehabilitation target.

Recommendations:

- Fill holes and solution cavities at the Au slimes with "inert" coarse and fine granitic gravel excavated from the surface of the Quarry Granite and the silica dumps located just west of the Discovery Pit prior to further soil deposition. This provides a similar material to the adjacent bed rock granitic geology.
- The company should consider only rehabilitating the gold slimes dump at this stage as the emerald dumps will need further investigation.
- Locate rock-filled gabions should be placed across the drainage located just downstream of the slimes dam to aid in sediment dispersion.

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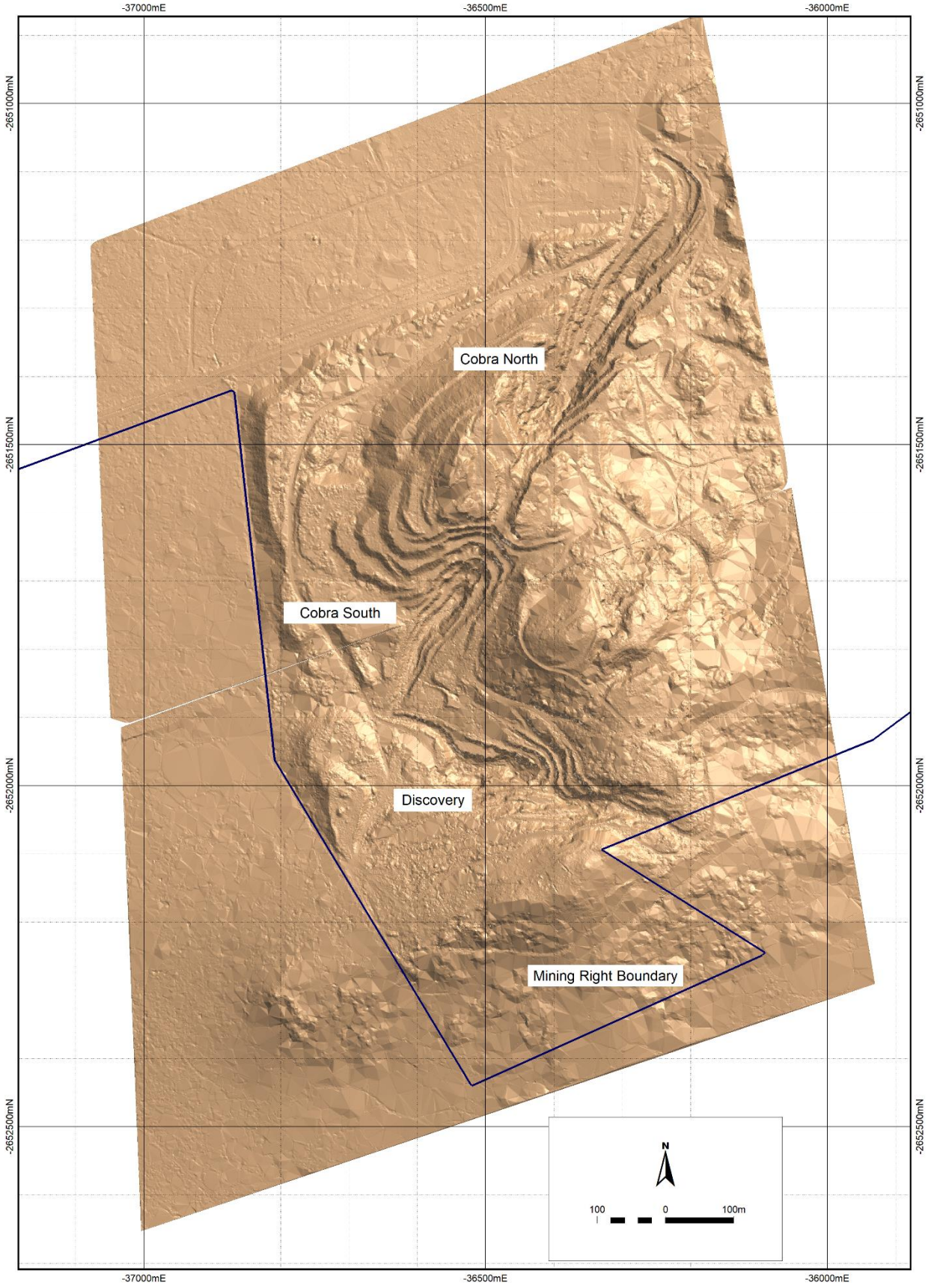
Figure 24: Western portion of the LIDAR survey covering the Cobra and Discovery pits



9.6. HISTORICAL DATA COMPILATION

Magnum also undertook a local and international search in an attempt to re-establish the information base, in particular, looking for lost historic technical data that had been developed over the 50+ years of production and also to conduct a review of the data. The search was only partially successful as no access to formal mining or governmental sources or previous pre-Magnum management proved possible. Magnum also resurrected ties with several mining professionals who worked at Cobra in the 1980's. This accumulated knowledge will prove invaluable to URA's plans to proceed into evaluation and mining.

In 2016, ACA Howe georeferenced and digitised drilling data shown on numerous (but incomplete) historical plans and cross sections. Due to the nature of the data available, ACA Howe considers that the digitised collar locations could have an error of up to 10 m at Cobra and up to 5 m at Discovery, compared to the original plans and cross sections.

9.7. MINERALOGICAL DESCRIPTION OF GEM EMERALDS

During 2014/15, Ms N. Coffin completed a review of the emerald/green beryl minerals located on the long abandoned sorting tables in the Cobra Pit for an MSc thesis at Camborne School of Mines. The conclusions were as follows:

"The South African emeralds are gemologically similar to the Zimbabwean emeralds, as both have similar colours, SG, RI and birefringence. This may be a function of the geological settings in which the emerald mineralisation occurred. Both are related to greenstone belts that are Archaean in age and have been affected by the same orogeny's. However, there is an age diffidence between the two emeralds and the emeralds form in different terrains which are likely to have different availabilities of elements, so the differences in inclusions is to be expected. The emeralds differ from Colombian emeralds as the Cobra emeralds contain higher MgO and Na2O contents and lower Al2O3 contents, but are similar to those from Zambia. Therefore, relatively high levels of substitution occur in the South African emeralds compared to the Colombian emeralds. The Cobra emeralds are geochemically most similar to those from Brazil and Zambia. The Al2O3 content does not vary with varying Cr2O3 and V2O3 values as the Cr2O3 and V2O3 concentrations are too low to affect the Al2O3, despite the fact that Cr and V substitute into the Al site in the crystal lattice. The inclusions found in the emeralds are typically solid inclusions of micas from the country rock, molybdenite, Fe-oxides, calcite, and apatite and fluid inclusions of negative crystals and some two-phase liquid and gas inclusions. The fluid inclusions could not be analysed in detail, but the range of inclusions is similar to those from Zambia, Brazil and Pakistan as these all have two-phase inclusions as well as micas, Fe-oxides and dolomite/calcite. Brazilian emeralds have also had inclusions of molybdenite recorded. The gemstones analysed in this study have relatively low contents of Cr, but this may be a function of the samples provided and not of the deposit as the gemstones cannot be considered truly representative as they are the tailings from the sorting table. Not all of the stones analysed could be termed emeralds, but green beryl, as often the Cr content was below 0.1 wt.% or below the detection limit. The value of the emeralds provided for this study would be considered low due to the poor colour and clarity of the

emeralds. The poor colour may be due to restricted availability of Cr or V surrounding the emerald, which also caused zoning in the emeralds."

9.8. GEOLOGICAL AND STRUCTURAL MAPPING

Magnum commissioned SRK Consulting to conduct a short 6-day ground geological and structural mapping programme of the Cobra and Discovery Pit areas. The mapping programme covered about 50% of the 1ha mined area at GEM and needs to be extended.

SRK's structural report, received by Magnum in 2015, largely supports the general understanding of the mineralising events at GEM and suggests that exploration/evaluation work should be concentrated around the known brown-field areas at, and close to, Cobra. The final geological map is shown in Figure 25 with an annotated 2016 photo showing the geology of the southern wall of the Cobra North pit is shown in Figure 26. Unfortunately the mapping project did not improve the understanding of the two divergent structural directions at GEM.

9.9. TOMRA COLOUR SORTING TESTS

Magnum provided emerald-bearing material to Tomra of Hamburg, Germany so that the effectiveness of colour and laser sorting could be assessed. The following conclusions and recommendations were made by Tomra:

"TOMRA's PRO Tertiary COLOR was used for the 3-10mm material, while for the sorting of the 10-30mm size fraction TOMRA´s PRO Secondary COLOR Dual and PRO Secondary LASER full-scale sorters were tested. For the fine-grained material very encouraging results were achieved with COLOR technique. Here, some pure emeralds as well as inclusions and intergrowths of emeralds with host rock were detected by the sensor. The amount of the miss-detected particles in product fraction was very low. The sorted yield was between 0.09% and 0.17%. An additional demonstration test with some added emeralds showed good results by recovering all 10 emeralds. For the coarse-grained material 10-30mm, two methodologies were tested. At first, the tests were run with the COLOR technology. Here, some quartz as well biotite specimens with emerald intergrowths were recovered from the initial feed. Thus, in total, 1.08% of the mass was ejected. Afterwards, same as for the fine-grained material, a test with some additional emeralds was performed. Here, 17 emeralds were additional added to the feed. One particle got lost to the waste. The total yield was 2.0%. In comparison to COLOR, also LASER was tested. With the TOMRA proprietary LASER technology we can generate an enhanced signal from the emeralds compared to the host rock. This better contrast in the raw signal lead to better recovery and lower yield in the LASER sorting test. Due to the higher resolution of a COLOR camera for the finer size range a COLOR sorter is recommended. Based on these very encouraging results, TOMRA recommend as a next step, discussions about flow-sheet design which can form basis of a budget estimation for equipment and operating costs."

Roy Spencer visited TOMRA in June 2022 to assess the work undertaken by TOMRA for Magnum (Adit Mining). It was concluded that the results of the test work are sufficiently accurate for URA to utilise in their assessment of equipment for their recovery plant.

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Figure 25: Mapping at GEM by SRK Consulting (2016). See Figure 24 for the location of the boundary of the Mining Right

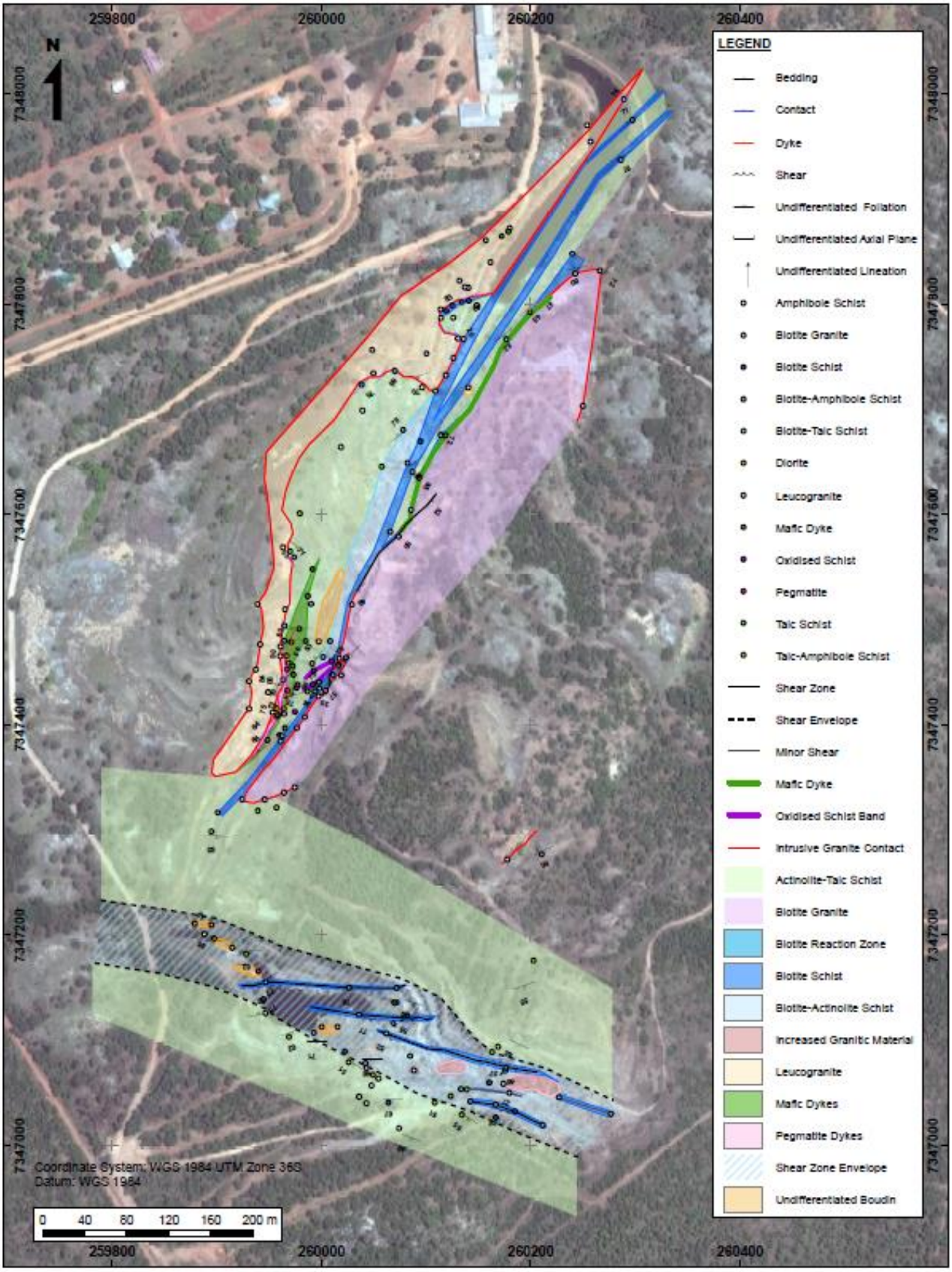
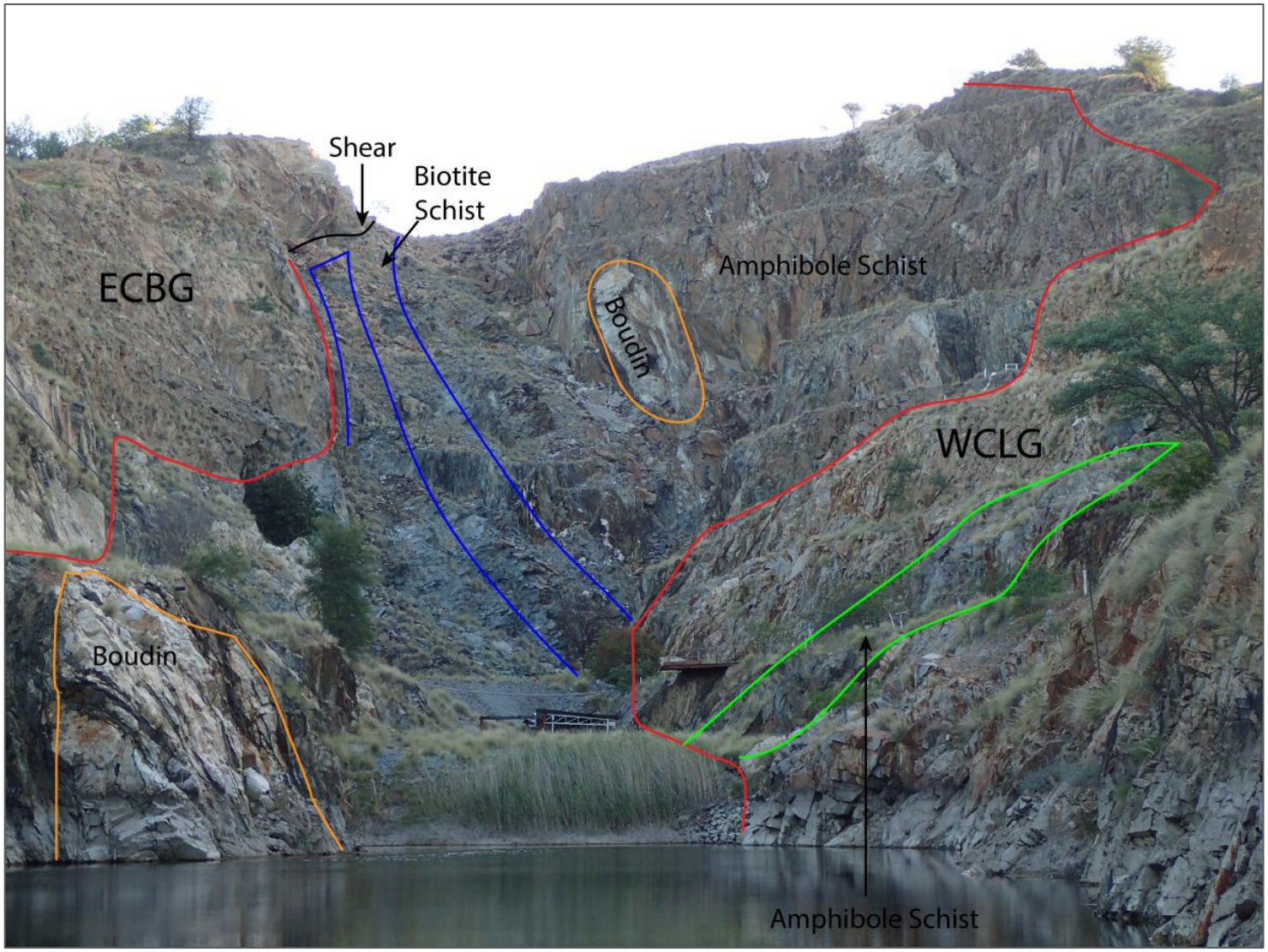


Figure 26: Annotated photo of the Cobra North pit, looking south (SRK Consulting, 2016)



10. DRILLING

No drilling has been completed by URA since the acquisition of the project. The drilling described below was completed by Magnum, the former owner of the property. A total of 21 RC holes were drilled by Magnum in two cross strike traverses to test the postulated far north strike extension of the Cobra North emerald mineralisation. Locations are shown on Figure 27 and a summary of the RC drilling is provided below:

- The 21 holes were angled (55-67º) in an attempt to provide as wide a first pass test of the on-strike extension of the Cobra mineralisation as possible (the emerald-bearing schist is interpreted to have an almost vertical dip).
- The southernmost of the traverses, called the Hockey Stick (HS) traverse (so named for the adjacent right angled access track into the Level 10 excavation), tested some 105 metres of cross-schist strike with 10 angled holes.
- The Water Tank (WT) traverse tested some 165 metres of the schist strike and was located some 260 metres northeast of the HS traverse, separated by the large emerald fines dumps. The exploration pits dug by Magnum had previously suggested that the mafic talcose schists of the Mulati Formation (the hosts for the emerald mineralisation) were present over a wider cross strike area north of the Cobra pit towards the airstrip, than exists in the pit itself. The two drill traverses do indeed support this thesis.
- The supposed source of the beryllium mineralisation has often been given as one or more of the granites that are located within the GEM Property, so the lack of obvious granite outcrops in the drilled traverse areas has been given as a reason for not considering this far northern strike extension area to be prospective for emeralds. The drilling, which intersected several granite bodies especially on the WT traverse (and which is also supported by the results of the pitting programme), has negated this assumption. This further suggests that the perceived lack of granites in this area is likely to be a function of erosion level.
- Level 9 is at about 567 m asl and this is also the approximate elevation of the collars of the HS traverse. The adjacent slimes dump reaches about 578 metres and thus present a significant obstacle to exploration of the 260 metres between the two drill traverses.
- All 21 holes are collared in variously red residual soils between 1 and 4 metres in thickness.
- It is important to note also that just west of the most westerly of the HS holes, very close to the entry track (on the northern side of the track), there is an outcrop of what may be a remnant of a pre-existing alluvial sequence possibly related to drainage off the ancient Cobra Hill. Alternatively, the sequence may also be a colluvial/eluvial remnant of very early mining activities in the area.
- Table 12 provides a summary of the samples collected at both traverses with notes on emerald/beryl grains recovered in each hole.

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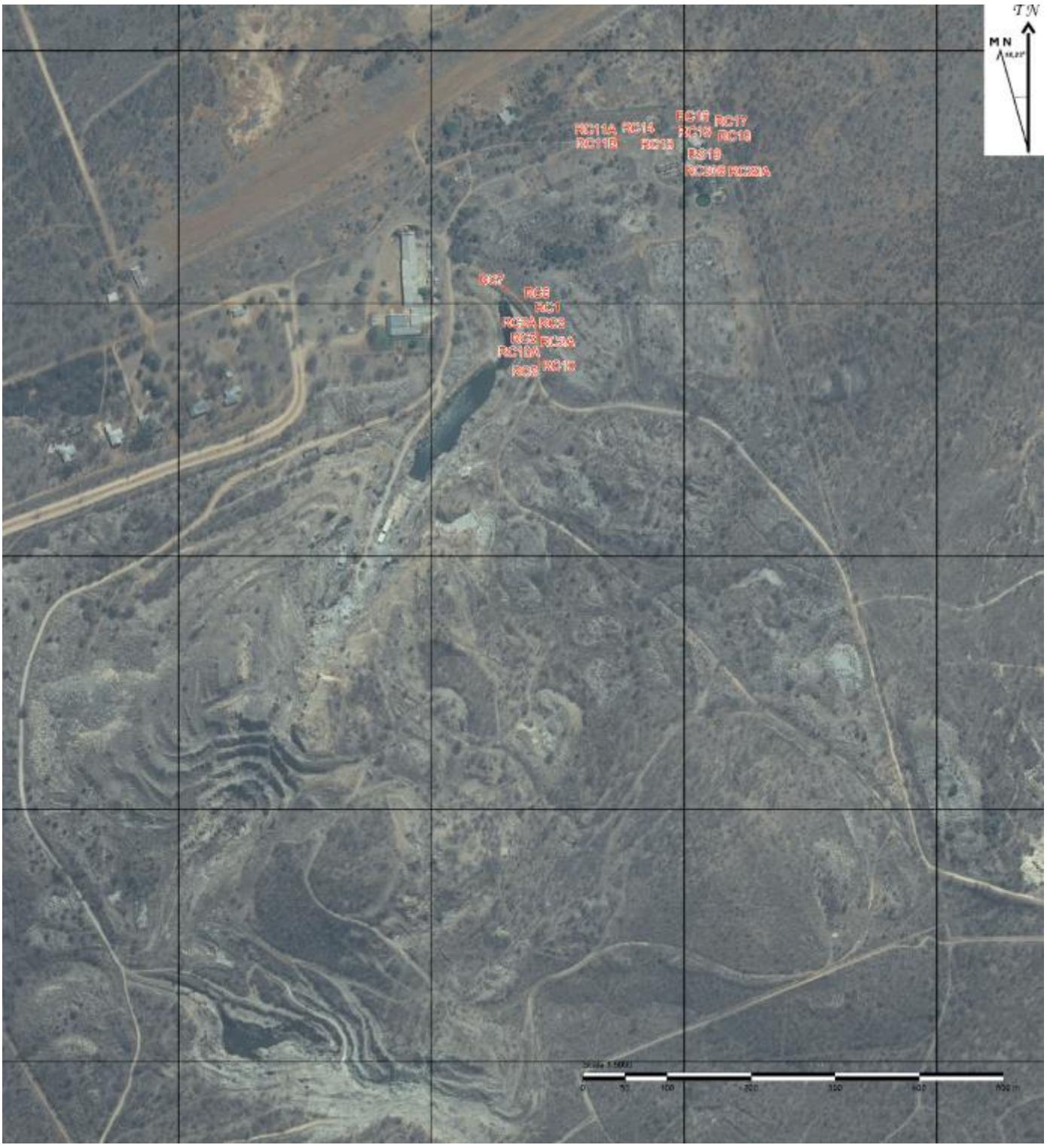
Figure 27: Location of Magnum RC drilling (modified after Planet RSA, 2015)



- Of the 21 holes, only two had no emerald/beryl recovered at all. All but two of the 21 holes reported talc schists. This indicates not only that the Mulati Formation is much more widespread across the GEM property than has hitherto been understood, but that the Cobra emerald/beryl mineralisation may extend for a significant distance northwards from the Cobra pit itself.
- This in itself is significant as it calls into question whether there are other undiscovered extensions of the general Cobra/Discovery mineralisation. For example, west of the known Discovery deposit and further to the north of the Cobra pit.
- There is a need for a more efficient sample reduction system which incorporates efficient dust removal.

10.1.1. HOCKEY STICK TRAVERSE

- Of the ten holes drilled on this 105 metre long cross strike traverse, nine were drilled to 40 m downhole and a single hole to 30 m. Total meterage drilled was 390 m with approximately 35 420 kg samples collected and processed at the mine (see Table 12).
- Of the 10 holes, only 1 had no emeralds/beryl at all (RC10) and that is because it intersected dolerite for its entire 40 m length. All other holes contained emeralds/beryl (from 1 grain up to 350 grains in RC5) not only occasionally in the red soil overburden, but mostly in the deeper hard rock talcose schist sequences. There was only one granite intersection recorded in the samples, located in hole RC6 over a four metre long intersection. This unit may be related to a granitic intrusive that outcrops in the HS part of the entry track into the pit.

10.1.2. WATER TANK TRAVERSE

Of the eleven holes drilled on this 165 metre long cross strike traverse, ten were drilled to 35 m downhole and a single hole to 16 m. Total meterage drilled was 366 m with approximately 315 20 kg samples collected and processed at the mine (see

10.1.3. DRILL SAMPLE ANALYSES

All drill samples were prepared at the GEM property by the Magnum staff. Analyses for all the RC holes drilled on the two traverses are shown in Table 12 below.

Of the eleven drill holes, only two had no emeralds/beryl at all (RC11A & 11B) and that is because they intersected dolerite and granite for their entire lengths. Granite was also intersected in RC13, 14, 15, perhaps indicating the presence of a large buried granitic body. All other holes contained emeralds/beryl (from 2 grains up to 700 grains in RC18) and also occurring in the in the red soil overburden occasionally (eg. RC19), but mostly in the deeper hard rock talcose schist sequences.

The fact that the emerald mineralisation appears to be widespread across the two traverses and that not all of the emerald intersections are associated directly with granites or boudins is also important. This may point to the newly identified Discovery type of microfracture associated mineralisation (MFR).

Table 12: RC Summary Cobra Far North						
Location	**Hole ID**	**Hole Depth (m)**	**From (m)**	**To (m)**	**Emerald / Beryl Grains**	**Comments**
Hockey Stick	1	40	4	5	1	Undifferentiated talc schist
			11	12	4	
			20	22	56	
	2	40	10	11	50	Talc schist
			11	12	17	
			24	26	67	
	2A	40				Dolerite 13 to 19 m
	3	40	1	3	2	Talc schist
			4	8	85	
			31	40	78	
	3A	40	0	1	2	Talc schist
			7	9	2	
			15	16	1	
	5	40	1	2	1	Talc schist
			33	38	300	
	6	40	0	3	35	Talc schist and 5 m granite
			5	8	7	
			15	16	6	
	7	30	0	2	35	Talc schist
			8	9	1	
	10	40	38	39	1	Talc schist
	10A	40	23	26	15	Talc schist
			28	29	21	
			32	33	1	
			35	40	35	
Water Tank	11A	16				Dolerite 3 to 16 m
	11B	35				Granite 4 to 35 m
	13	35	0	1	3	Talc schist
			9	13	71	
			24	25	30	
			26	27	30	

Table 12: RC Summary Cobra Far North						
Location	**Hole ID**	**Hole Depth (m)**	**From (m)**	**To (m)**	**Emerald / Beryl Grains**	**Comments**
			28	29	8	
			34	35	5	
	14	35	0	2	2	Granite 2 to 35 m
	15	35	3	5	6	Contamination? Granite to 35 m
	16	35	0	1	1	Granite 3 to 4 m. Talc schist
			14	17	69	
			26	33	90	
	17	35	1	4	5	Talc schist
			4	7	121	
			10	13	38	
			19	21	68	
			28	35	83	
	18	35	2	15	400	Talc schist
			25	35	279	
	19	35	0	3	32	Talc schist
			3	5	2	
			14	16	19	
			22	25	86	
	20A	35	5	6	2	Talc schist
			8	9	3	
			16	17	4	
			25	26	70	
	20B	35	14	16	19	Talc schist
			19	21	18	

10.1.4. DRILLING CONCLUSIONS

The analysis presented in Table 12 shows the intersections by Magnum in the Hockey Stick and Water Tank areas, 250 m along strike to the northeast of the Cobra pit. The RC drilling programme confirmed the earlier results of Magnum's pitting work north of the Cobra pit and demonstrates geological continuity from the Cobra pit. The drilling also confirmed that the MF schist package in this area is significantly

wider than that encountered within the Cobra pit itself and shows the potential for additional discoveries along strike from the Cobra pit.

11. EMERALD PROCESSING

11.1. GENERAL

Magnum's on-site staff constructed a plant capable of processing up to approximately 20 tph. Plans are being prepared by URA to increase the effective feed rate up to 50 tph.

The plant is based on a jaw crusher, wet trommel, sizing screens and manual sorting. URA/Magnum have investigated state of the art colour sorters and believe these will have an important role in the future production plant.

Gemstones recovered in the washing plant could be termed crystals in rock due to the variable amounts of host rock matrix adhering to the stones. This rock matrix and badly fractured portions of individual gemstones are removed manually to produce rough material (crystal) ready for gem cutting and polishing. In the past, some larger crystals and crystal aggregates have been sold with attached matrix as specimens, with mine estimates of the weight and quality of the included gemstone crystals. These two materials would eventually be considered to be the first saleable product and form the basis of royalty (fee) payments to the State.

The exact details of the 1980's recovery plant are not known. However, a brief description accessed by ACA Howe, indicates that the mine used a 2-circuit system with a 1º and 2º crusher with screens and storage bins. Crushed, washed and sized material was fed onto a rectangular disposed set of belts where up to 150 sorters worked through the feed and raked off the waste. Sorting was only undertaken during daylight hours. No sorting was undertaken on cloudy or dull days. It is known that at its peak in the 1960's and 1970's, GEM employed a staff of hundreds of local individuals as miners, plant workers and particularly as sorters.

During the later period of the Pourolis's tenure, a "secret" emerald recovery system (a Dense Medium System - DMS), was introduced by the Golden Dumps management. DMS systems were successfully used by Rio Tinto at Sandawana in the 1970's but require significant experience and technical expertise to operate successfully. ACA Howe has no information about the success of this system at GEM.

J. Langlands of ACA Howe visited GEM in late 1982 and early 1983 and was acting mine geologist from late March until mid-June 1983. However, he was not involved with the processing procedures in the main plant or with the sorting and classification of the main plant emerald production. He was however, more closely involved with the test plant processing and Coding of verification samples from 19 locations (8 tonnes/sample) but was not allowed to be involved in the classification of the cleaned product into the following categories:

- ABC/LARGE (ABC/L).

- REJECT/LARGE (R/L).
- ABC/SMALL (ABC/S).
- REJECT/SMALL (R/S).
- VERY/SMALL (V/S).
- WASTE.

The test plant processing was apparently similar to, but on a smaller scale than, the main plant processing and the following description of test plant procedure, Coding and final cleaning, sorting and weighing, is based on a report by J. Langlands report (see Section 10.5 - ACA Howe, March 1983).

11.2. ACA HOWE TEST PLANT PROCEDURE

The test plant feed as run by J. Langlands (in the early 1980's) was regularly dampened down to reduce dust. Larger material was broken using sledge hammers to pass through a grizzly. Primary crushings were passed through a two-deck vibrator with 1/2 inch and 1/8 inch screens. Undersize went to sand tailings for stacking.

The +1/8 inch material was washed and screened in a trommel and classified in a 3 deck vibrator into +1/2 inch, -1/2 inch to +3/8 inch, and -3/8 inch to +1/8 inch. These three products were fed to separate, white-topped, slow-moving conveyor belts manned by twelve local sorters who were supervised by two security guards. Emeralds and emerald-bearing schist fragments were hand-picked off white coloured belts and put into secure boxes, of which there were one per sorter.

The tailings of the two finer grained streams were transferred to the main plant coarse tailings conveyor. After initial picking, the tailings of the coarse +1/2 inch belt were passed to a secondary crusher, wet-screened and passed to the sorting belts to pick newly-exposed emeralds. The contents of the boxes were bagged by the senior security guard.

11.3. CODING

The system of emerald sample classification that was in use at the time, orchestrated by two senior members of mine management (Managing Director and Mine Manager), was known as "Coding". Codes were assigned visually and subjectively, based on experience, without obvious reference to standards or standard samples and used to describe test plant production from the 8 tonne samples, to decide which sources of emerald-bearing rock to process through the main treatment plant.
The Codes were 4 digit numbers representing colour, clarity, quantity and payability, each digit was scored on a scale of 0 to 9. In spite of the ideals expressed in a written description of this system by the Managing Director, it has been suggested that from time to time, the assigned Codes were changed to suit the purposes of the mine owners.

In theory, a Code of 3191 would represent a large yield sample of low general significance. A Code of 8859 would represent a sample with high quality emerald with high payability in spite of a low

index of quantity (ACA Howe, March 1983). The very subjective nature of the system is provided in the analysis by ACA Howe (see Table 13).

By the end of February 1983, 46 test plant samples (8 tonnes in weight each, with occasionally multiple samples collected per location) were collected and processed and supervised by ACA Howe geologist J. Langlands. These had also been coded and assigned a saleable emerald grade in grams/tonne. A graph of Code Payability against saleable emerald average grade showed positive correlation with wide grade ranges. This data is no longer available to ACA Howe.

Payability Code 3 and above probably represented schist with an emerald grade of 2.5 g/t or more. A grade of 5 g/t is probably represented by Codes 4 and 5. The wide grade ranges are probably due in part to the subjectivity of the Coding system, the absence of fractional Codes and the presence of unusually good or unusually poor stones in some samples.

An example of code variability (based on three separate individuals coding parcels of stones from individual bulk samples) is shown in Table 13 below. This is based on codes recorded on sample tags associated with the ACA Howe sampling. An "Averaged" Code is also shown to illustrate differences between the different coded values given and has no basis in fact.

Table 13: Code variations in ACA Howe bulk sampling (1983)

Sample Number & Location	Grams Emerald	JGL Code	TS Code	LJC # Code	"Averaged" Code
14 - North Reef	20.0	7744	n.a.	6643	"7194"
15 - North Reef	55.0	7667	n.a.	7756	"7712"
16 - Cobra Main	185.8	7688	7787	7797	""7757"
18 - Cobra Main	131.5	7788	7887	8888	"8188"

Note: Codes sequentially represent collective values for colour, clarity, quantity and payability for the parcel of stones produced from the bulk sample. # Code used in documentation.

In the future, ACA Howe strongly recommends that a reference collection based on stone colour and clarity be prepared (at least in duplicate) over time so that stone grading is uniformly and consistently codified and buyers are not confronted by variable grading of parcels by different stone graders. If cutting and polishing is found to be viable, similar reference collections would also be required for faceted and cabochon stones.

11.4. FINAL CLEANING, SORTING AND WEIGHING, HISTORIC AND RECENT

After Coding, the primary emerald sortings from the test plant were washed, cleaned of adhering schist, tumbled with -1/2 inch +1/4 inch clean crushed quartz, and sorted by size, colour and clarity by trained

local sorters in a locked final sorting cage at the mine office. Each sample of cleaned stones was sorted into the categories provided in Section 11.

The sizes of these products are believed to have been determined by the use of sieves inside the secure final sorting cage but ACA Howe's geologist (J. Langlands) formed the opinion that these were not standardised and the nominal sieve sizes were not available. The emerald samples were bagged, labelled and sealed in polythene in the final sorting cage. The bags were opened in the weighing room of the office building and the contents weighed to the nearest 0.1 gram and immediately sealed again.

Huddlestone (January, 1983, in Appendix 2 of ACA Howe, March 1983) reported that ABC/SMALL material from the 19 samples produced by ACA Howe in 1983, included individual emerald rough stones from 0.40 to 2.60 carats in weight. He did not report the weights of ABC/LARGE stones or VERY SMALL stones.

Writing in Appendix V of the Cobra Emerald Mines Limited Placing Final Proof prospectus by Laing & Cruikshank and MMG Limited of May 1983, Mrs J M Coutts, an experienced and qualified gem trader, described a 30 kg consignment of emerald rough production from Gravelotte. The emerald rough was reported to be typical of Gravelotte and was examined in size and quality parcels determined by the mine, as ABC/LARGE - approximately 2.5 carats and over in size and ABC/SMALL - approximately up to 2.5 carats.

In November 1982, J. Langlands of ACA Howe took colour slide photographs of cleaned and sorted emerald rough together with pages from his notebook in the weighing room at Gravelotte. This photography allowed 69 grams of Cobra North Reef ABC/LARGE emeralds, comprising about 60 discrete emerald fragments to be measured as 2 x 4 mms up to 6 x 12 mms, with an average weight of 1.15 grams or 5.7 carats per rough stone. A similar photograph allowed 1,108 grams of ABC/SMALL emeralds, comprising a few thousand discrete emerald fragments, to be estimated with an average grain diameter of 3 mm, and an average weight of perhaps 0.40 grams or 2.0 carats per rough stone. The present author has not reviewed these photographs for this current CPR.

From the reports by Huddlestone and Coutts and photography by Langlands, the weights of individual rough emerald stones may be simplified and summarised as follows:

ABC/SMALL (ABC/S); 0.4 carats (0.08) to 2.6 carats (0.52), averaging 2.0 carats (0.40g).
ABC/LARGE (ABC/L); above 2.5 carats (0.50), averaging 5.7 carats (1.15g).

11.5. 2002 ACA HOWE SITE VISIT

Emerald processing at Gravelotte was witnessed by the visiting ACA Howe geologist (J. Langlands) in 2002. In 2002 Langlands was allowed to view the new treatment plant that had been set up using the secret DMS process to preconcentrate crushed and trommelled material so that 70% of the feed could be rejected prior to intensive manual sorting on static table screens by a complement of 31 sorters. In addition, a number of the sorters were allowed to collect richer material in rubber buckets from places chosen by themselves from newly blasted underground working areas, for personal

sorting. Sorting was seen in progress on static table screens in the open air at the recovery plant which was located on the floor of the Cobra quarry and on one of the higher western benches. ACA Howe was not allowed to inspect the plant closely due to the apparent commercial sensitivity of the DMS ore pre-concentration process being used.

At the sorting tables, the Run of Mine (ROM) emerald-bearing concentrate, known by the mine as ROM in 2002, which included rough emerald with attached waste, were put into numbered steel safe boxes with two locks, issued to each sorter. These boxes were issued daily to the same sorter and kept overnight in the mine safe and emptied once a month in the presence of the mine owner. A close watch was kept on the individual performance of each sorter on a monthly basis but each sorter's emerald production was no longer being individually classified. An individual bonus scheme was being operated to reward emerald productivity.

The mine owner visited the site for a few days a month to classify, weigh and transport the emerald rough production for export.

The tonnage of mineralised material extracted for processing and emerald rough (g) production figures were recorded in shift reports and an emerald ROM rough and bonus ledger. About 70% of ROM was rough emerald and included all A, B, C, D and Low Grade rough emerald stones. The classification criteria of these different qualities, including stone sizes, were not provided but the J Langlands reported that the emeralds looked very similar to those produced under his supervision as acting mine geologist in 1983.

11.6. SALES DESCRIPTION – HISTORIC

Details of historical sales and valuations are given in Section 6.5. Unfortunately, there are no detailed historic descriptions of the Cobra Mine ROM emeralds save that given below and by R. Huddlestone (1983), a well known London-based gemstone appraiser who inspected a parcel of Cobra emeralds. He commented that the run of mine (ROM) rough material seen by himself contained a “commercially acceptable range of colours”; namely green with secondary yellow, green without secondary colouration and green with a secondary bluish colour.

ACA Howe considers it doubtful that any moderate to good quality stones would have ever been made available to academic studies during the mine life. This calls into question the relevance of all opinions and test work that are available in the published world other than the more recent report by Coffin (2015).

12. RECENT EMERALD PRODUCTION

No mining or processing has been completed by URA since the acquisition of the project. The emerald production described below was by Magnum, the former owner of the property.

Magnum undertook a 4229 m^3 bulk sampling programme at both the Cobra and Discovery pits in March 2019. Details of this programme are provided below, from original Magnum documents.

The bulk sampling was undertaken by South Africa firm DOMINO BLASTING on behalf of Adit Mining. The work was completed under the supervision of mine personnel who also carried out the sample processing at a plant designed and created by Magnum using a DebTech colour sorter. However, it is understood that the DebTech sorter was eventually considered by Magnum to be unsuitable for the programme and was removed from site. As summarised below, the total volume of material sampled from Cobra and Discovery was 4229 m^3.

Cobra Samples:

- RC1 (1004 m^3) was located to the east of the pit on the "Hockey Stick".
- Cobra 930 and 950 (total of 700 m^3) were located on the eastern face of the pit between the 930 and 950 grid sections.
- Cobra 990 (1229 m^3) was also located on the eastern side of the pit centred on grid line 990.

All four samples were located on the 8 and 9 Levels and after blasting produced effective five metre deep pits.

Discovery Samples:

L28 (1296 m^3) was located on the northern face of the pit and also produced a 5 metre deep pit.

The processing plant for the programme consisted of the following items:

- Grizzly for oversize.
- Primary jaw crusher.
- Trommel for washing.
- Sizing screens.
- Manual sorting.

Colour Sorting testwork was carried out on selected parts of these samples by TOMRA in Germany on behalf of Magnum with satisfactory results (see Section 9.9). ACA Howe was able to visit the TOMRA test facility in Hamburg in June 2022 and examine the units used by the company in the processing of these samples and believe that TOMRA have an effective system with applicability at GEM, if only for washed, cleaned and sorted feed.

An Excel spreadsheet describing the results of this work was made available by URA. Unfortunately, ACA Howe understands that none of the emerald or beryl product recovered during this programme are available for inspection and that no statistical analysis or valuation study was conducted on the

product and that full JORC protocols were not applied to the exercise. Neither are there detailed geological descriptions available for the samples. As such, ACA Howe is unable to use the results to support a grade/value estimate.

13. DATA VERIFICATION

13.1. ACA HOWE SITE VISIT

ACA Howe's Senior Associate Geologist, Roy Spencer, completed a site visit to GEM from 29th May to 3rd June, 2022 accompanied by URA representatives B. Olivier and W. Marais.

The following activities were completed during the site visit in 2022:

- Property inspection and review of 2019 bulk sample sites.
- Review of on site hard copy historic data.
- Discussions with URA representatives with respect to their future plans for the GEM property.
- Inspection of and discussions regarding the recovery plant on site.
- Discussions regarding enhanced security plans, power and process water supplies and labour sources.

URA has advised ACA Howe that no exploration has been completed since the site visit, however the following changes have been made to the site infrastructure:

- Upgrade of water supply and water storage capacity available for processing operations.
- Completion of site security upgrades and electrical fencing.
- Establishing, rehabilitating and upgrading of the main haulage roads between the open pits and processing plant.
- Rehabilitating and upgrading of the main electrical infrastructure.
- Approximately 1.5ha of historic gold slimes and tailings have been rehabilitated.
- Management accommodation has been refurbished.
- Upgrading of the dewatering and screening circuit.

13.2. PREVIOUS EXPERIENCE AT GEM BY THE CP

Roy Spencer made several previous visits to GEM during his involvement in the project on behalf of Magnum, the previous owners.

During these visits, Roy Spencer completed the following activities and was closely involved in activities completed by independent consultants, namely:

- Verification of the presence of significant quantities of emeralds of varying size and quality.
- Verification of deposit type and identification of potential for structurally controlled mineralisation principally at Discovery, but also possibly at Cobra.
- Surface geological mapping completed by SRK Consulting.
- The assessment, compilation and digitising of historical drill hole data by ACA Howe.
- Supervision and design of various property-wide surveys (helicopter geophysics, pitting, RC drilling of the northern extension of the Cobra North schist body).
- Suggestions for the staged rehabilitation of gold slimes dam.
- Identification of future potable water supplies by hydro drilling.
- Identification of MF-type mineralisation.

The completion or involvement of the Competent Person in these activities enables him to verify that they were completed to acceptable standards for the purposes used in this report.

13.3. DRILL HOLE DATA

ACA Howe has used historical drill hole data to interpret and identify inert hole geological continuity at the Cobra and Discovery pits, together with surface geological mapping. Emerald and beryl counts have been used to aid interpretation but have not been used in grade estimation.

Drill hole collar location data was sourced from historical plans and cross sections. Cross sections used by ACA Howe varied from 10 to 20 m spacing. The drill hole data was digitised from existing cross sections digitised by ACA Howe in 2016 on behalf of Magnum. ACA Howe considers that the digitising process could have resulted in location errors up to 10 m at Cobra and up to 5 m at Discovery. Future drilling in and around and influenced by this drilling will need to be undertaken with these errors in mind. Not all available cross sections were digitised by ACA Howe as a number of sections were not available at the time.

Detailed original information on core and percussion drilling, geological logging and sampling methods are not available to ACA Howe. However, during his time onsite in 1982-83, J Langlands of ACA Howe observed two serviceable, trailer and skid mounted, Tone core drilling rigs equipped to drill angled and vertical holes to about 200 metres using N and B series down-hole tools to produce core samples between approximately 61 and 37 millimetres diameter. He recalled that core recoveries exceeded 95% and saw a specimen drill log which recorded 97% core recovery. He also observed three so-called Wagon drills capable of air-flush hammer drilling in angled and vertical holes up to approximately 152 millimetres diameter, to depths of a few tens of metres.

ACA Howe notes that the relatively small size of drill hole samples and the relatively large grain size of emerald mineralisation calls into question the representativeness of both the core and hammer

methods of drilling. However, since hammer drilling is fast and inexpensive, it may be an appropriate method to provide semi-quantitative indications of emerald mineralisation. The inevitable breakage of emerald grains, possible sample contamination and the absence of geological details and structure and loss of important geological data needs to be understood before using this hammer system.

Core drilling is slower and more expensive and may be more appropriate as follow-up to successful hammer, wagon or RC drilling to provide geological, structural and gemmological information.

It is important to note that while ACA Howe used the drill hole data during the construction of the geological model, it was not used for grade estimation (Section 14).

13.4. PRODUCTION AND BULK SAMPLE DATA

ACA Howe has used historical production and bulk sample data to make a grade estimate. Historical production and bulk sampling procedures are described in Section 6. Importantly, in 1983, while in the position of acting mine geologist, J. Langlands of ACA Howe supervised the test plant processing and coding of verification bulk samples from 19 locations. The procedures and results of the work are described in Section 11. On completion of the work he noted:

"A comparison of test plant assays from rock in situ and from stockpiles of mined ore from the Discovery 388 zone and Discovery South (Discovery 8 zone) with the recovered grades from full scale production, indicates that for the Discovery South material, main plant recoverable grades are about 65% of test plant grades and for the Discovery 388 zone about 50% of the test plant grades. This discrepancy is extremely serious and could, if not corrected, result in the virtual disappearance of orebodies. For example, 6 g/t ore, assessed by test plant data may produce only 3 g/t in production, which is below the grade required for the monthly call.

Ore in place at Cobra Main Reef between 6 L and 9 L as defined by TP samples 16, 18, 20-22, and 517 give an average grade of 17.9 g/t. The average main plant recoverable grade from the same material has only been 8.4 g/t (consignments 1/83 – 5/83). The reasons for this discrepancy between test plant and main plant may be many including:

- Sampling errors.
- Accidental or deliberate dilution.
- Differing sorting methods between the two plants.
- The quality of the labour at each plant.
- Theft from the Main Plant.
- Different final sorting procedures and standards for TP and MP product."

In the estimate in Section 14, ACA Howe has utilised mine production and bulk sample grades, rather

than the test plant data. Considering the discrepancy described above, the historical mine production and bulk sample grade may be an underestimate. It is recommended that URA conducts a closely controlled bulk sampling programme to JORC standards to determine whether this is indeed the case. The use of formal Chains of Custody are imperative for all programme involving gemstones.

14. MINERAL RESOURCE ESTIMATES

In contrast to other commodities, the estimation of resources for coloured gemstone projects is usually completed by assigning bulk sample and/or production grades to zones with demonstrated potential to host mineralisation. At GEM, emeralds have been recovered from emerald-bearing schist by previous owners from production (open pit and underground), bulk sampling, trenches and drill hole samples.

The resource estimation methodology used by ACA Howe for this Resource Estimate is as follows:

- Incorporation of previously digitised drill hole data (complied by ACA Howe in 2015) from drilling programmes undertaken throughout the areas of Cobra, Discovery and adjoining areas.
- Construction of a geological model using Leapfrog Geo, from which the volume of emerald-bearing schist was estimated for the Cobra and Discovery Pits.
- Analysis of the grade of emerald-bearing schist from past production and bulk sampling records.
- Exploration Targets were estimated for zones for which there is limited sampling data but where some continuity of geology and mineralisation can be demonstrated.

14.1. TOPOGRAPHY

A LIDAR survey completed by Magnum in 2015 was used in the construction of the current geological model. Wireframes were extended past the topography in the initial modelling phase and then cut by the topography in Leapfrog Geo in the creation of the final model.

14.2. GEOLOGICAL WIREFRAMES

Paul Gribble, Senior Associate Resource Geologist of ACA Howe, has created a geological model by implicit modelling in Leapfrog Geo, under the supervision of the Competent Person, R. Spencer. The basis for the model is the emerald-bearing schist identified by past workers at Cobra and Discovery. Interpretation of the emerald-bearing schist by past workers shown on historical cross sections was utilised and was added to by the Competent Person's own experience at GEM. Historical drill hole data including emerald/beryl grain counts, geological drill hole logging, as well as surface geological mapping by SRK Consulting were also used in the construction of the model.

Drill hole data available for the modelling is summarised in Table 5 (Section 6) and cross sections are shown in Figure 17, Figure 18 and Figure 19. A plan view of the modelled emerald-bearing schist, and the location of the Inferred Resource and Exploration Targets is shown on Cross sections of the geological model are shown in Figure 29 and Figure 30.

Figure 28: Modelled emerald-bearing schist, and location of Inferred Resource and Exploration Targets

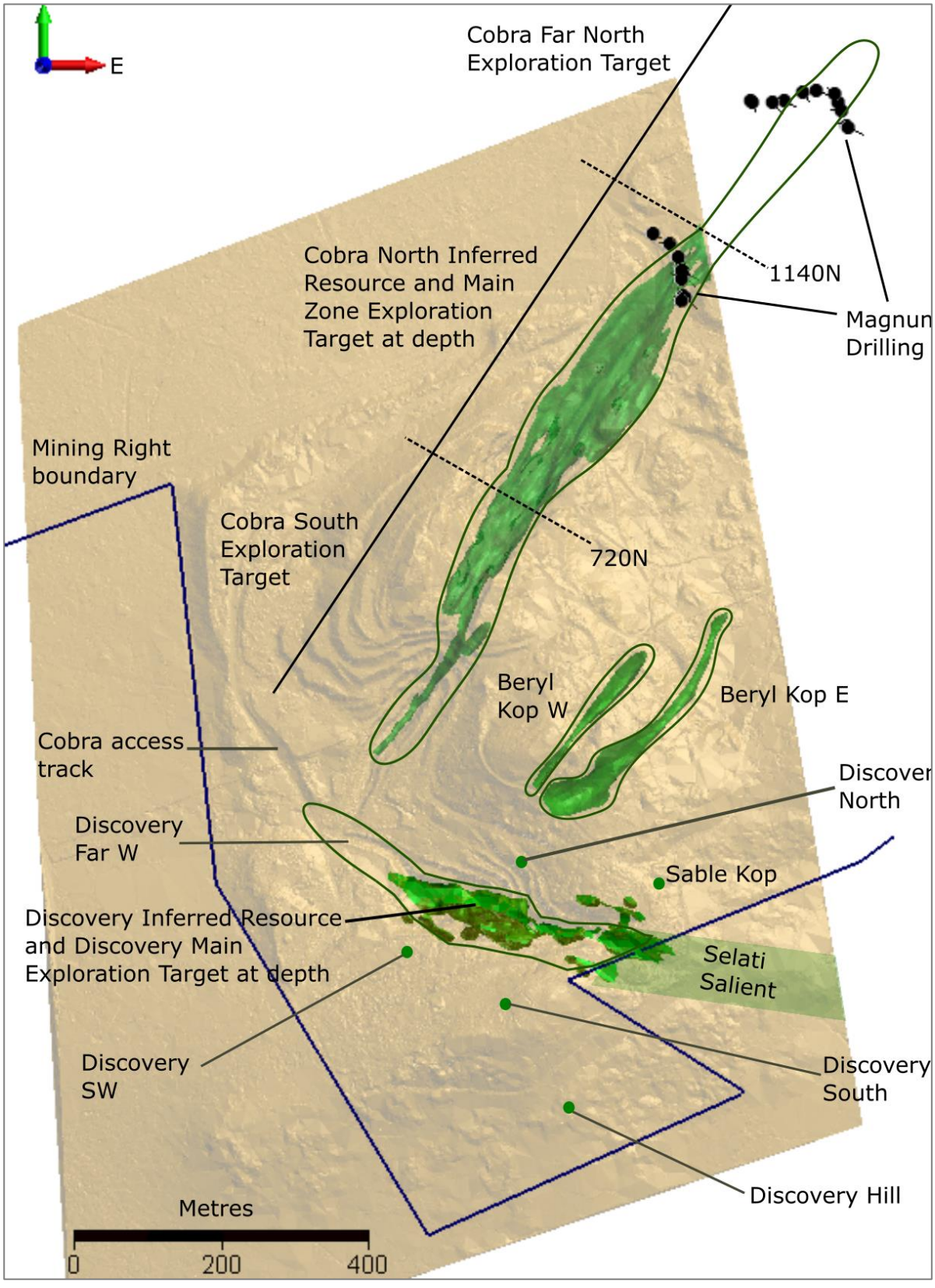


Figure 29: Cross section 750N showing the geological model (P. Gribble, 2023) used in resource estimation at Cobra

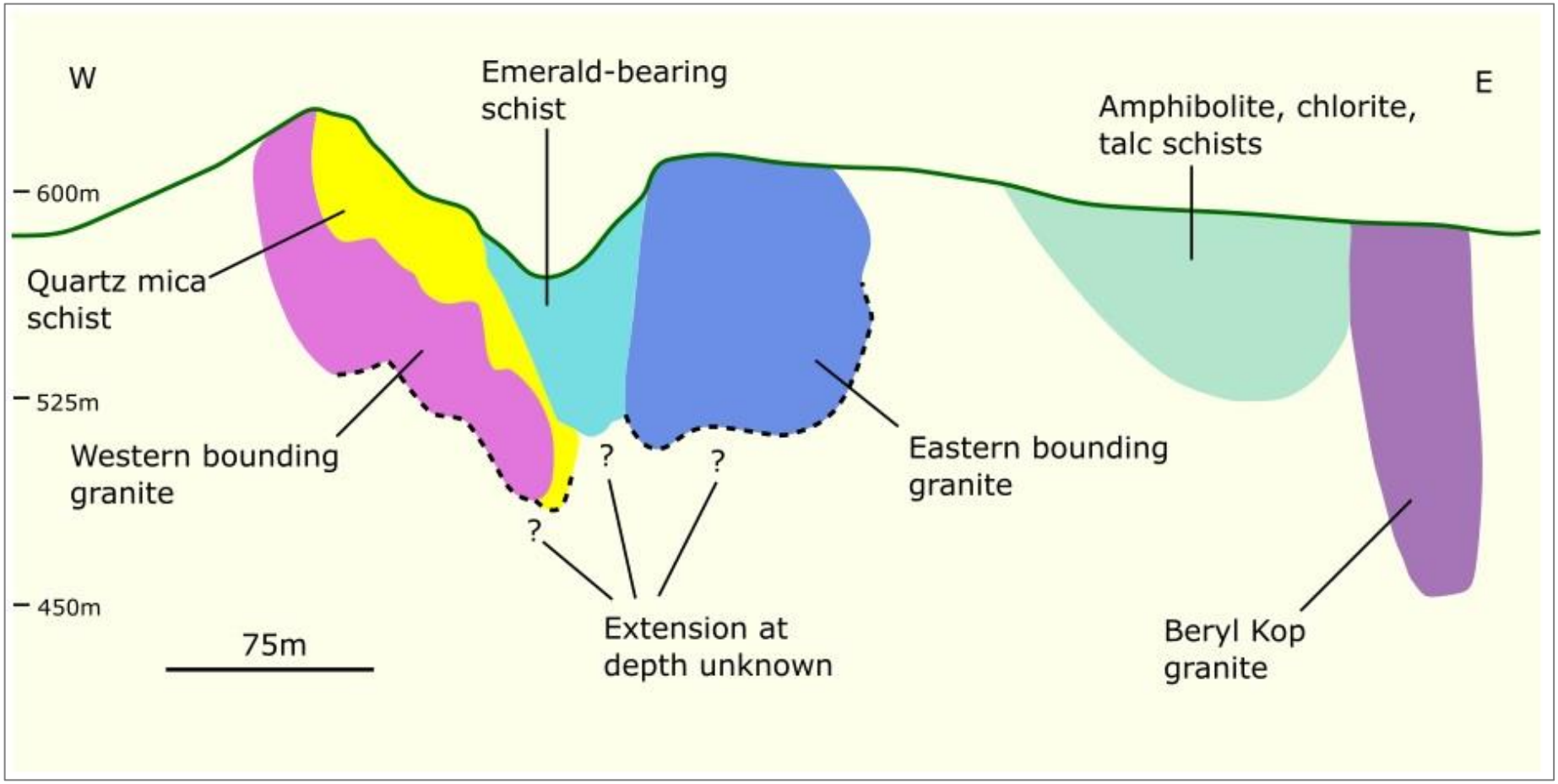
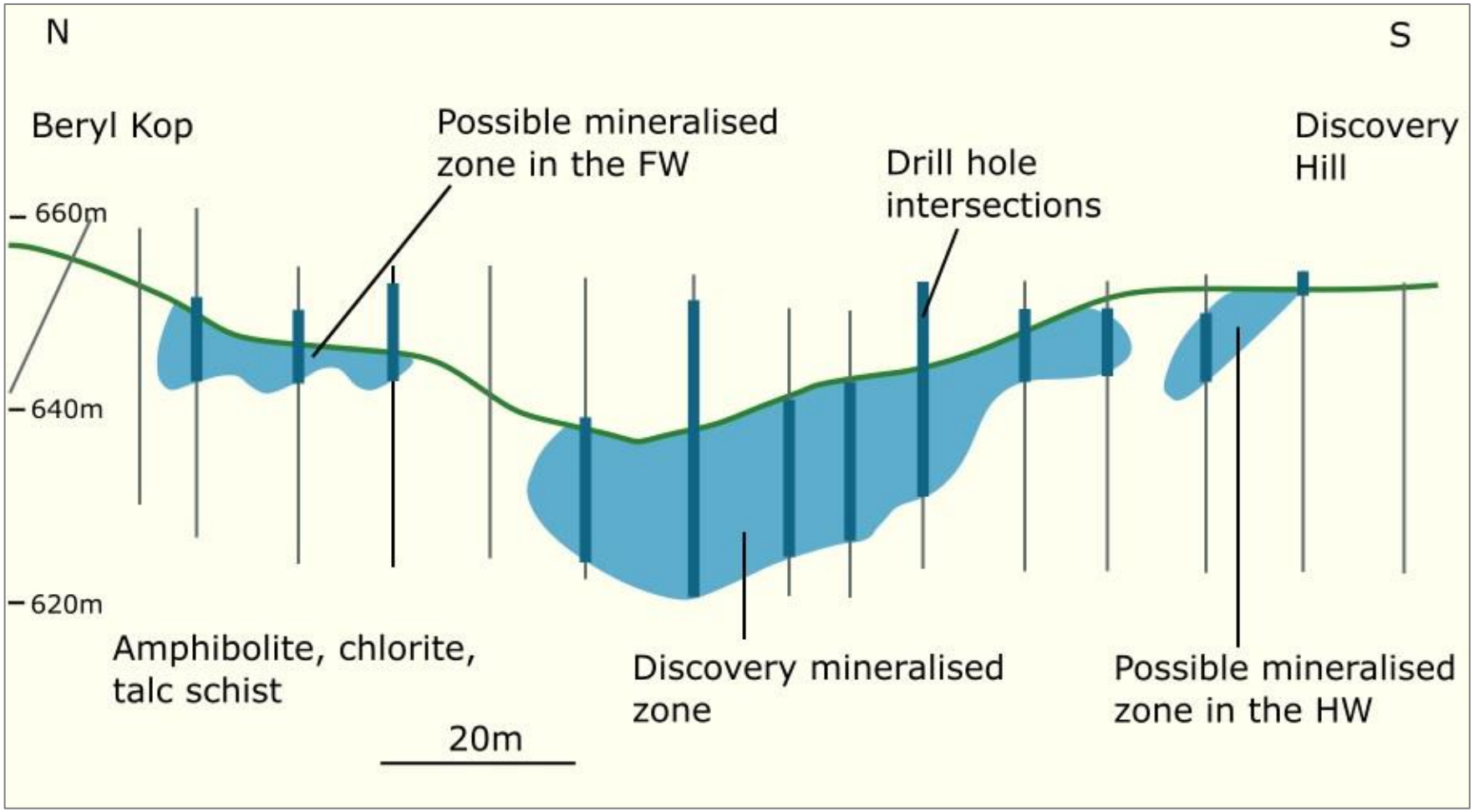


Figure 30: Cross section 42E showing the geological model (P. Gribble, 2023) used in resource estimation at Discovery



14.3. BULK DENSITY

A bulk density of 2.7 g/cm^3 has been used to convert the volume of the modelled emerald-bearing schist to tonnes. This is in line with the figures used in the historical estimates described in Section 6, though no information on the origin of this figure is available to ACA Howe.

As a check on the bulk density, in 2016 A. Phillips, Senior Associate Geologist of ACA Howe, assessed the mineralised emerald-bearing schist proportion of each lithology intersected in 180 one metre long samples from nine wagon drill holes (mostly collected from Cobra and mineralised). Using the average density for the rock types intersected the assessment resulted in a density of 2.79 g/cm^3 (Table 14). While this is not a replacement for a detailed programme of density measurements, the assessment provides a degree of confidence in the density of 2.7 g/cm^3 used in historical resource estimates and the current study.

Table 14: Calculated Cobra tonnage factor

Mineral/Schist in Drill Dust / Chips	Interval SG Used	Total Percent Present [per m]	Overall Percentage
Amphibole/ite	2.96	3,379	18.7 %
Dark Mica	2.92	3,051	6.9 %
Carbonate	2.90	665	3.7 %
Chlorite	2.87	1,118	6.2 %
Dolerite	2.90	480	2.7 %
Muscovite	2.83	10	0.1 %
Pegmatite	2.70	3,571	19.8 %
Quartz	2.73	917	5.1 %
Talc/Talc Schist	2.75	4,836	26.8 %
Totals & Averages	**2.79**	**18,027**	**100.0 %**

14.4. RESOURCE DEPLETION

The LIDAR survey provides an accurate, up to date surface showing the extent of historical open pit mining. However, records of past underground mining are incomplete. In the mid 1980's, mine geologists estimated that there was "in excess" of 5,000 tonnes of emerald-bearing schist between 5 and 9 Levels at Cobra. However, it is known the area above 9 Level (570m RL) was worked

extensively between 1984 and 2001 and therefore, none of this zone has been included in the Inferred Resource category.

This amounts to the removal of the following estimated tonnages calculated previously from the historic draft CP reports and thus not included in the current resource estimate:

- Levels 1 to Level 9: of the order of 10,000 tonnes of emerald-bearing schist.

14.5. POTENTIAL FOR EVENTUAL ECONOMIC EXTRACTION

ACA Howe has considered the potential for economic extraction of the emerald mineralisation using open pit mining as preferred by URA. ACA Howe constructed a series of conceptual pit shapes enabling the reporting of tonnages of emerald-bearing schist and waste rock bench by bench. Using estimates provided by URA, the mining of the conceptual pit shapes containing the Resources stated in Section 14.7 was shown to have the potential to be extracted economically.

14.6. MINERAL RESOURCE CLASSIFICATION

The classification of mineral resources used in this report conforms with the definitions provided in the 2012 edition of the JORC Code.

Mineral Resource classification is based on measurement and estimates of geological and grade continuity. At Cobra and Discovery, the assessment of geological continuity is based on wagon and diamond drilling on cross sections spaced 10 metres and 20 m apart. Grade continuity is derived from production and bulk sampling data. Emerald recovered in drill holes only provides an indication of potentially emerald-bearing schist zones and cannot be considered as emerald grade. This is due to, amongst other items, the considerable nugget effect in coloured gemstone deposits, the small diameter of the drill holes, and the style of some of the drilling. Therefore these indications can only be semi-quantitative. However, the consistency of emeralds recovered from drill holes at Cobra and Discovery on section lines spaced at only 10 to 20 metres apart does provide an indication of the continuity of mineralisation in the emerald-bearing schist.

A number of factors result in coloured gemstone deposits having a lower level of confidence than other commodities and these are discussed in the following sections.

14.6.1. ASSESSMENT OF RESOURCE ESTIMATION FACTORS

Tonnage:

- Data interpretation - low to moderate level of confidence: the package of emerald-bearing schist is reasonably well defined from drilling and surface geological mapping, and the interpretations of previous mine workers are readily available. A payability factor of 50% has

been applied to the emerald-bearing schist to acknowledge that mineralisation within the schist is controlled by factors that have not been modelled due to the limited quantity of data. The 50% payability factor was first proposed by J. Langlands of ACA Howe after his experience working on the project, including the supervision of a bulk sampling. Roy Spencer, also with extensive experience at GEM and the Competent Person for this report, is in agreement that 50% is a suitable figure.

- Data spacing - high level of confidence: the drilling was completed on cross sections spaced at approximately 10 to 20 metres at both Cobra and Discovery, providing confidence in the continuity of the emerald-bearing schist.
- Data provenance - low level of confidence: the historical nature of the data results in a lower level of confidence due to limited information on drilling and sampling procedures, together with a limited control on drill hole locations. ACA Howe estimates that the drill hole locations at Cobra and Discovery could have an error of up to 10 m and 5 m respectively. However, ACA Howe considers that this will have a low impact on the overall volume of emerald-bearing schist estimated.
- Density - low level of confidence: volumes were converted to tonnes using a density of 2.7 g/cm^3 as described in Section 14.3.
- Depletion - low level of confidence: the LIDAR survey provides a sufficiently accurate representation of historical open pit mining, though information on underground mining is limited (Section 14.4).

Grade:

- Data interpretation - low level of confidence: production and bulk sample grades vary significantly, potentially due to controls on mineralisation that have not been possible to model due to limited data.
- Data provenance - low level of confidence: the emerald grade has been estimated using production and bulk sample grades achieved by previous owners of the project. Other than for the bulk sampling supervised by J. Langlands of ACA Howe, there is only limited information on procedures available for this work. It is considered that previous owners were focused on higher grade mineralisation related to reaction zones around boudins, possibly without regard for other forms of structurally controlled mineralisation.
- In-situ grade estimation - low level of confidence: the final emerald grades assigned to the estimate are a measure of recovered, cleaned rough prepared from an intermediate plant product, rather than an in-situ grade. In addition, the grade does not include any measure of colour or quality. There are several sources of potential losses during mining and processing as described below:

    1. Mining losses - apart from actual losses of material underground, yield depends partially on the method of breaking the enclosing rocks without breaking or damaging the emeralds.

2. Plant losses - stones which are not wholly liberated from the mainly biotite and/or phlogopite matrix will report to tailings. Processing may also impact on stone size and quality.
3. Preparation of rough - gemstones recovered generally have variable amounts of host rock matrix adhering to the stones. The removal of this material from fractured or poor quality stones can reduce the yield grade.
4. Theft - this is a widely acknowledged major issue at all gemstone mines (especially historically). Importantly, stolen stones are often the largest and best quality material produced. There is ample anecdotal evidence of theft at GEM, including people being offered emeralds from the mine.

Roy Spencer believes that total grade loses between mining face and sales point at any coloured gemstone mine could be as much 30-40% of the total in situ geological grade. The more serious point however, is that the loss of revenue on a per tonne mined basis from face to sales from all factors, could be as much as over 50% of the hypothetical in situ value.

Aside from ACA Howe's 1983 bulk sampling programme, there is insufficient direct sampling evidence to estimate the likely grade of any potential resource. An overall average yield grade for rough stones of 6.4 g/t is assumed here. This grade is the averaged production yield grade of 6.37 g/t for the period from 1978 to 1982, which excluded a dump retreatment adjustment for the same period from approximately 50,000 tonnes. Hence the decision by ACA Howe to use the more reliable, and available, production grade estimations from the 5 years of production.

Emerald Valuation:

- Valuation data - low level of confidence: historical indications of emerald value from GEM are described in Section 6.5. No recent independent valuations, comments or confirmed sales have been made available to ACA Howe. It is acknowledged that GEM was an operating mine for over 50 years with total emerald production of nearly 113 million carats, at times employing over 300 staff and it is understood that there were emeralds of sufficient value to support such an operation.
- ACA Howe inspection: Roy Spencer, the Competent Person for this report, is a coloured gemstone expert and has inspected numerous emeralds from GEM during his time working on the project. He has verified the presence of significant quantities of emeralds of varying size and quality on the GEM property both in situ in emerald-bearing schist outcrops and in tailings and other dumps around the Cobra pit.

Based on the factors discussed above, ACA Howe has classified part of the deposit as an Inferred Resource and part as an Exploration Target. The Inferred Resource is defined as areas of demonstrated geological continuity shown by closely spaced drilling, in areas where production and bulk sampling have been completed by previous owners (Cobra and Discovery). Exploration Targets have been

estimated beneath the drilling in areas where there is no evidence of a break in geological continuity, and along strike of the drilling, particularly to the north of the Cobra pit, under the Cobra North Pit and in both strike directions and at down-dip depth below 10 Level to 14 Level (and under 7 Level at Cobra South to at least 10 Level). Exploration targets are also present at Discovery basically from the present mine surface in all directions (north, south, east and west) and onto the Discovery Hill.

14.7. INFERRED MINERAL RESOURCE STATEMENT

The Inferred Mineral Resource estimated is summarised in Table 15. Note that Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. Due to the uncertainty that may be attached to Inferred Mineral Resources, it cannot be assumed that all or any part of an Inferred Mineral Resource will be upgraded to an Indicated or Measured Mineral Resource as a result of continued exploration.

Table 15: Inferred Mineral Resource estimate for the GEM emerald deposit

Deposit Zone	Category	Tonnage (Mt) Emerald-Bearing Schist*	Grade (g/t)	Emerald Tonnes*	Emerald Carats (Mct)*
Cobra	Inferred	1.2	6.4	3.9	19.4
Discovery	Inferred	0.7	5.7	1.9	9.6
Total	Inferred	1.9		5.8	29.0

*After applying 50% payability.

Notes: Mineral Resources effective 6th December 2023

1. Mineral Resources were estimated using the definitions and guidelines of the JORC Code (2012).

2. Assigned grades are derived from limited historical production and bulk sampling.

3. Tonnages are derived from modelling of interpreted emerald-bearing schist based on historical drilling. A payability factor has been applied as acknowledgement that it has not been possible to model controls on mineralisation within the schist due to limited data.

4. Both the estimates for Cobra and Discovery have been depleted by an approximate tonnage based on historical information and limited historical records.

5. Inferred Mineral Resources have a large degree of uncertainty as to their existence and whether they can be mined economically. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

6. The quantity and grade of reported Inferred Mineral Resources in this estimation are uncertain in nature and there has been insufficient exploration to define these Inferred Mineral Resources as an Indicated or Measured Mineral Resource and it is uncertain if further exploration will result in upgrading them to an Indicated or Measured Mineral Resource category.

7. A bulk density of 2.7 g/cm^3 was used for the modelled emerald-bearing schist. The value used is based on the figure used by previous owners and assessment of lithologies intersected in drilling.

14.8. EXPLORATION TARGETS

The JORC (2012) definition of an Exploration Target is as follows:

"An Exploration Target is a statement or estimate of the exploration potential of a mineral deposit in a defined geological setting where the statement or estimate, quoted as a range of tonnes and a range of grade (or quality), relates to mineralisation for which there has been insufficient exploration to estimate a Mineral Resource."

Exploration Target mineralisation has been defined as part of the modelling programme described in Section 13.2 together with additional areas of mineralisation known and observed in the project area. The Exploration Targets (Table 16) are all areas where the current database for the GEM property indicates that there is geological continuity with adjacent Mulati Formation (MF) emerald-bearing schists, (except in the case of the "Area between Cobra South and Discovery West" where there is only geological continuity with adjacent MF schists). ACA Howe recommends that, inter alia, the first three of these Exploration Targets, Cobra pit Main Zone, Far North and South, are assessed in year 1 of the two year programme, together with three other Exploration Targets selected from the remainder. These latter three could be Discovery Hill, Discovery West to Cobra South and Cobra South itself.

Table 16: Exploration Target mineralisation for the GEM emerald deposit

Exploration Targets	Location	Tonnage Range of Emerald-Bearing Schist (Mt)*	Grade (Em. & Beryl) Range (g/t)
Cobra pit	Main Zone 10.5 to 14 Level (510 to 485m RL)	0.6 – 0.8	4.8 to 8
	Far North	0.7 – 0.9	4.8 to 8
	South	0.4 – 0.5	4.8 to 8
Discovery Main	Below Inferred Resource	0.4 – 0.5	4.5 to 7
Discovery	West/Far West	0.35 – 0.45	4.5 to 7
	North	0.5 – 0.7	4.5 to 7
	South	0.4 – 0.5	4.5 to 7
	Hill	3.3 – 4.0	4.5 to 7
Area between Cobra South and Discovery West		0.3 – 0.4	4.5 to 7
Sable Kop		0.1 – 0.2	4.5 to 7
Beryl Kop	East	0.2 – 0.3	2.2 to 5
	West	0.4 – 0.5	2.2 to 5

*After applying 50% payability

Notes:

1. Exploration Targets were estimated using the definitions and guidelines of the JORC Code (2012).

2. Exploration Targets are conceptual in nature and are not Mineral Resources. An Exploration Target is material that has a reasonable degree of geological confidence but for which there is insufficient exploration to define a Mineral Resource. It is not certain that further exploration will result in the target being delineated as a Mineral Resource.

Cobra Main Zone

This area is defined as that area below the Inferred Resource from 10.5 to 14 Levels (510 – 485 RL). The majority of the drilling by previous owners did not test these depths, however the deepest hole intersected emerald-bearing schist down to 490 RL.

Cobra Far North

This area extends from approximately 1010N to 1300N, from the northeastern limit of the Cobra Inferred Resource to the RC drilling by Magnum (described in Section 10). Little exploration has been undertaken further north than 1300N (northeast along strike of the Water Tank traverse) and there is no outcrop in this area. However, preliminary pitting by Magnum in this area has identified MF reaction-type zones between 1300N and the airstrip.

ACA Howe considers it reasonable to assume that at least geological continuity exists in this area along strike from the Cobra pit.

Cobra South

Limited sub-surface data is available on the Cobra South area, however geological mapping and past mining provides evidence of geological continuity and continuity of emerald-bearing schist from 570N to approximately 320N. The Exploration Target has been extended to the deepest drill intersection of emerald-bearing schist at 10 Level (approximately 45 m below surface).

Discovery Main (below the Inferred Resource)

This area, in part, is the focus of the MFR style of mineralisation. A number of angled holes were drilled by previous owners on the north facing benches of the pit, where the +/- 60^{o} core holes drilled northwards by Golden Dumps contain significant MRF mineralisation for long distances down-hole and along the section lines. The deepest emerald intersection at Discovery is approximately 200 m below surface or approximately 155 m below the Inferred Resource, though this was a single emerald grain. The deepest zone with more consistent emerald grain counts is approximately 115 m below surface or 70 m below the Inferred Resource. Therefore, the extension of the Exploration Target to only 30 m below the Inferred Resource is conservative.

Discovery West to Far West

This zone covers the extension of the Inferred Resource at Discovery, westwards to the Cobra track. Historical records show that a small number of drill holes were completed in this area but no downhole data is available, other than a single reference to emeralds having been found in three of these holes. However, interpretation of airborne geophysical data appears to show what may be the geophysical reflection of a shear zone extending the west of the Inferred Resource in the same area.

Discovery North

This area covers the northern face of the pit for approximately 30 metres north to meet up with the Beryl and Sable Kop zones. Historical records show that this area has been tested by drilling in the past but no downhole data is currently available. However, approximately 100 metres to the east, in an analogous geological area along strike from Discovery East (in MF schists), drilling data from the 1980's shows that a number of emeralds were recovered in drill hole samples. ACA Howe is not aware of any outcropping emerald-bearing schists in this area.

This area is parallel to the strike of the Discovery pit and may be the northern extension of the Discovery MF package.

Discovery South

This is the area opposite Discovery North but covering the southern face and adjacent to the Discovery Hill mineralisation. A fence of drilling extends southwest from the Discovery pit for 150 m. Significant consecutive emerald grain counts were recorded in schist in three drill holes, up to 30 or 40 m from the southern edge of the pit.

Discovery Hill

This 14-18ha north facing hill slope below the quartz deposit at the crest of the hill is possibly the most important of the Discovery Exploration Targets, with significant emerald recoveries from both trenches and drill holes and exposed MF metavolcanics over its entire surface area. The MF metavolcanics may extend as much as 100 metres below surface here.

Discovery West/Far West to Cobra South

ACA Howe has not located any prior detailed mapping of this area. However, there is good indication that the MF metavolcanics do occur in at least part of the area and given its location between the Discovery and Cobra South mineralised zones, and on strike with both, it is a reasonable assumption that this area could be mineralised. Ground examination of this area suggests that whereas the other Exploration Targets should contain relatively good drilling ground, this area may be more challenging and triple tube drilling may be necessary.

Approximate dimensions for the twelve Exploration Targets are provided in Table 17 below.

Table 17: Exploration target dimensions		
Zone	**Exploration Target**	**Approximate Dimensions (Length x Width x Depth)**
Cobra	Main Zone	425 m x 50 m x 25 m
	Far North	300 m x 80 m x 25 m
	South	250 m x 30 m x 45 m
Discovery	Main	400 m x 30 m x 30 m
	West/Far West	200 m x 50 m x 30 m
	North	300 m x 50 m x 30 m
	South	300 m x 40 m x 30 m
	Hill	450 m x 400 m x 15 m
	Between Discovery West and Cobra South	130 m x 70 m x 30 m
Beryl Kop	East	250 m x 25 m x 30 m
	West	350 m x 30 m x 30 m
Sable Kop		150 m x 25 m x 30 m

14.9. COMPARISON TO PREVIOUS RESOURCE ESTIMATES

Previous historic resource estimates are described in Section 6.9 and are summarised below:

14.9.1. M. WILSON - GEOLOGIST (MAY 1985)

- Estimate by M. Wilson, Chief Geologist at GEM, in May 1985.
- The total of 2.387Mt of schist in which mineralised zones bearing emeralds were estimated to contain 1.055Mt of emerald-bearing schist at a cut-off grade of 3 g/t. Of this +3 g/t material, 0.71Mt was estimated to contain grades of over 5 g/t (see Section 6.9 for a detailed breakdown of the estimate).
- The methodology used for the estimate is not known, though it is noted that it was made at the time when production was taking place and likely with access to all of the project and governmental data.

14.9.2. MINE MANAGER (SEPTEMBER 1985)

- Estimate for Cobra by an unnamed Mine Manger.
- The estimate suggests that 100,000t of schist had been mined since May 1985. This included 40,000t of +3 g/t emerald-bearing material, of which 25,000t had a grade of above 5 g/t (see Section 6.9 for a detailed breakdown of the estimate). The cut-off of 3 g/t would provide some justification of the decision that a payability of 40%, was appropriate.
- The methodology used for the estimate is not known, though it is noted that it was made at the time when production was taking place and likely with access to all of the project and governmental data.

14.9.3. JOHN LANGLANDS - ACA HOWE (MARCH 2013)

- Estimate by J Langlands of ACA Howe in 2013, included in a draft report.
- The report shows an Inferred 1.03Mt of emerald-bearing schist at Cobra and Discovery.
- An additional Exploration Target below the inferred tonnage at Discovery was estimated at 0.32Mt. Additional Exploration Targets northeast of Cobra, east of Discovery (outside the current Mining Right), southwest and south of Discovery, northwest of Discovery, and at Beryl and Sable Kop increased the total Exploration Target tonnage to 1.84Mt.
- The estimate was based on manual interpretation between cross sections to estimate volumes rather than being based on a computer-generated 3D model.
- The estimate took no account of open pit extractability.
- Mr Langlands provided a grade of 6.48 g/t from 82,400 tonnes of Discovery emerald-bearing schists in his Table 2.

14.9.4. JOHN LANGLANDS - ACA HOWE (FEBRUARY 2014)

- Mr Langlands revisited his earlier (2013) estimate but reduced the number of Exploration Targets to six.
- This estimate is also based on a manually derived tonnage calculated from individual calculations of 10 metre separated cross-trend sections.
- The Inferred Resource estimate was the same as previously (1.03 M tonnes at 6.4 g/t).

14.9.5. COMPARISON WITH 2023 ACA HOWE RESOURCE ESTIMATES AND EXPLORATION TARGETS

The earlier Resource estimates by J. Langlands of ACA Howe are described in Sections 14.9.3 and 14.9.4. The 2023 ACA Howe Inferred Resource estimate is a total of 1.9 Mt of emerald-bearing schist, divided into 1.2 Mt for Cobra North and 0.7 Mt for Discovery.

The major difference in the estimation methodology used for the historical and 2023 modelling is that the 2023 estimate has utilised Leapfrog modelling software, as opposed to a manually derived model. However, the 2023 estimate is similar to that provided previously as was expected.

The current estimate does not include Cobra mineralisation above 9 Level as this is now believed to be largely mined out and the confidence in the tonnage was improved by Magnum's bulk sampling in both pits and from the discovery of significant numbers of emeralds in reacted biotite schists in both of the RC traverses. ACA Howe has removed in the order of an estimated order of magnitude 10,000 tonnes from the Inferred Resource as a result of the expected losses of mine from selective mining operations after the mine closed in 1986.

The 2023 estimate includes a total of 12 Exploration Targets rather than the 6 and 7 of the earlier draft versions. This increase follows an improved understanding of the regional targets as a result of the detailed data review and time spent on site by Roy Spencer. This version has added an Exploration Target for each of Discovery West/Far West, Discovery West to Cobra South, Cobra South, a second zone for Beryl Kop and Cobra North Deep below 10.5 Level to 14 Level and the Cobra Far North zones.

It has been demonstrated that eleven of the twelve Exploration Targets show continuity of both mineralisation and geology. The other Exploration Target, the area between Cobra South and Discovery West, shows continuity of prospective geology though no evidence of mineralisation has been discovered to date.
It should also be noted that there are a number of drill holes that have not been included in the data digitisation undertaken in 2015 by ACA Howe as they have only recently been rediscovered and added to the data base. Digitisation of these will improve the general model, especially at Discovery.

15. OTHER COMMODITIES

14.1 GOLD

According to van Eeden et al (1939), gold was first discovered in the region in 1870 by French Bob, The Leydsdorp goldrush began in 1888, and ended when a malaria epidemic occurred locally in 1890 and compounded the effects of the very poor logistics that existed in the area at the time and even poorer water availability.

Prospecting and mining continued intermittently at a few localities (and pertinent to this report – at the Blue Jacket Mine) until 1916. In October 1888 there were 6000 claims pegged in the area and a public gold field proclaimed in that year with the town of Leydsdorp established in 1890 together with a formal Mining Commissioner. Jeppe produced a map of the "Zoutpansberg" Goldfields 1893, with Steuart's much maligned but actually accurate map of 1899.

During this short gold rush, Leydsdorp was renowned for the nuggety and refractory nature of the gold found, with only 45 claims remaining in 1891. The Zoutpansberg or Leydsdorp Gold Field compared

poorly to that at Barberton (established in 1884), with plenty of water and supposedly no malaria and on the route to Lourenco Marques. The old Sites East Battery and cyanide works are located just west of the tar road outside of the front entrance gate at GEM.

Relatively modern, post 1960's, exploration and mapping identified up to four parallel linear mineralised zones present along a 15 km strike distance (between Gravelotte in the east and Leydsdorp in the west) in this the southern part of the MGB as follows:

a) The well known **Antimony Line**, up to 250 m wide, on which the ConsMurch antimony-gold operation was based. Refractory antimony-rich gold reefs especially in the Gravelotte area east of Leydsdorp which were mined by ConsMurch from 1937 up until 2014 when the mine finally closed and the Australian company Stibium, took over.

b) The **Cu-Zn Line** of VMS deposits approximately 4 km to the north of the Antimony Line.

c) The **Blue Jacket Line** approximately 3 km south of the Antimony Line and over 3 km of strike.

d) The **Discovery-LaFrance Diggings Line** parallel to the Blue Jacket Line and approximately 3 km southeast of it.

Little is known of gold mineralisation in the modern literature in the region (or around GEM), except for a brief mention of the old Blue Jacket Gold Mine located at the far northern extremity of the GEM tenement on the western point of Blue Jacket Hill, just east of the tarred Gravelotte-Mica road. The Blue Jacket mine was apparently re-entered by the Pouroulis family in the late 90's (Mem. 81) and may have been the subject of a legal action by JCI at that time when underground workings held by ConsMurch/JCI were penetrated. In a modern repeat of this, local artisanal miners have taken over the Blue Jacket Line and commenced illegal mining there.

Note that in October 2010, the ConsMurch tenement which still existed over the Blue Jacket Hill area in 2011 (as per the Minxcon CPR for VillageMain and the ConsMurch ppt for an investor trip dated 22 November 2011). Although as of the 22 November 2011, the application for renewal had still not been granted.

However, an old (dated 1899?) mining claim plan of the Gravelotte area shows the gold workings in an area of very poor outcrop south of Gravelotte and basically south (see also the 1899 Steuart Map of the then so-called Zoutpansberg Goldfields), shows what seems to be a continuous line of old workings in schists and BIF over an approximately 7.5 km long west-east strike length across an area from the Cobra emerald workings to the Blue Jacket Hill. In the eastern extent of the workings, the schist belt appears to change strike (in the vicinity of GEM) to a north easterly direction and perhaps significantly, where the strike changes a concentration of gold occurrences are shown which were identified from surface and accessed underground via a number of shallow shafts and pits. The strike of the Blue Jacket reef zone changes from west-east to northeast at about the location of the GEM property. The extent of the old workings continues for another 8 or 9 km eastwards to La France in the east.

The change of strike may be related to a possible shear structure which is located just to the west of Spitz Kop Hill with a strike of +-120^{o} from true north and also may have something to do with the location of the high level Willie Granite which is likely to be the source of the Be of the GEM emerald mineralisation. The concentration of gold seems to increase markedly east of this structure towards and along the northern shoulder of Blue Jacket Hill. The Steuart plan (G388) indicates a 7.5 km long zone of BIF and ferruginous quartz reefs parallel to the Antimony Line and approximately 2500-3000 metres southeast of it and about 1800 metres northwest of the Cobra pit. This mineralisation may link the old Nyblatt and President workings just to the south of Spitz Kop Hill to the Blue Jacket Hill further east – a distance of 1500 metres.

The general strike of the reefs shown on G388 is west-east some 1300 metres south-southeast of the Spitz Kop hill. At this location the reefs appear to change trend to the northeast. The change of strike may be related to a structure which controls the location of the western side of Spitz Kop Hill. Van Eeden, et al (1939) record old gold workings on Beryl Kop.

14.1.1 PREVIOUS WORK (GOLDEN DUMPS)

Discovery

Gold was discovered in and below the Discovery open pit by Golden Dumps in the mid 1980's. From October 1985, the drilling and sampling programme was intensified and this led to the eventual development of the Discovery Shaft, on Level 5 bench and in April 1986 in the western part of the Discovery pit to exploit the auriferous pyritic schist. Evaluation delineated some 25,500 tons of material at an average grade of 13.5 g/t to approximately 150 m (Cobra Emerald Mines Limited, 1986). The auriferous pyritic schist was largely exhausted in 18 months but the operation continued intermittently until April, 1990.

In 1992 the Discovery Shaft was reportedly being tributed with the shaft pillars being extracted (Kedda, 1992). There were reported issues with JCI over ownership of the claims adjacent to the Golden Dumps workings here.

Access to the gold data was denied to J. Langlands of ACA Howe in 2002 and no emerald assays were carried out on the drill core after DDH 162. It is probable (based on anecdotal evidence) that emerald-bearing schist was exposed underground in the Discovery Pit gold mine but the extent to which the emerald potential of the underground workings has been assessed is unknown.

In a report to mine management in 1990, Burger reported the following:
"Discovery: The auriferous pyrite reef was mined from 1 Level down to 12 Level and consisted of a fold structure with the limbs striking north (western limb) and east (eastern limb). This fold structure plunges south west at 60^{o}.

From 5 Level down, granitoids apparently increase in size and number from 5 Level down and truncate the western limb on the northern side.

The eastern extension of the eastern limb pinches out at about 9 Level and from below 9 Level the western limb is characterised by deformation, pinching and short strikes of the reef and remnants of this can be seen up to 150m on strike.

The mechanism behind these phenomena is interpreted as due to granitoid intrusions. From about 5 Level it appears that these intrusions are much closer to the pyrite reef and the size and number of these intrusions increases.

The strike of mineralisation also changes due to these intrusions. As mentioned above, the pyrite reef is more deformed, but in addition low grade mineralisation is present in the granitoids with slightly higher grades on the contacts. Due to the general orientation of the mineralisation (ie. paralleling schistosity) further strike extensions west and east could be found." (See below Hostel Project).

In his draft 2012/3 CPR, J. Langlands makes reference to geochemical traverses for gold that the consultancy completed by ACA Howe to the east of Cobra.
Minor gold/sulphide mineralisation will undoubtedly continue to be encountered at GEM, and with the anticipated relatively low throughput it could be possible to contemplate a moderate to low angled riffle-type recovery system for fine (<1 cm) pyrite-associated gold recovery.

Northwest of Discovery to Hostel

A helicopter magnetic survey was flown over the area by Golden Dumps for which data is available in the onsite GEM offices. Burger (1990) reported that "The aerial geophysical work for this area support the strike extension of geological features for at least 1000 m" and he speculated the presence of "A magnetic gold-bearing zone at an average of 3.32 g/t Au over 148 cm". Six holes were apparently drilled at the Hostel anomaly and two were described as being successful. No further details are available to ACA Howe.

14.2 QUARTZ (SILICA) AT DISCOVERY HILL

It is the opinion of ACA Howe that the quartz of Discovery Hill is of high quality, lump quartz, suitable for industrial applications.

In 2005-2007 Venus collected surface samples on a grid covering the boundary between the GEM and Venus properties. These samples were chemically analysed by Silicon Smelters (SS) in Pietersburg, who currently consume 12 -13,000 tons of quartz per month and by Mintek in Randburg for suitability for smelting for the production of silicon metal. The laboratory tests were reported by Venus as very favourable with very low contaminant levels (Table 18) and reportedly, SS agreed to an initial amount of 3000 tonnes to conduct furnace production trials. Apparently, they would also take a regular monthly delivery of an amount yet to be determined, delivery to be paid by the producer.

Table 18: Quartz composition	
Element	**Amount**
SiO2	+99%
Fe	-500 ppm
Al	-500 ppm
Ca	-400 ppm
Ti	-129 ppm
Cr	-15 ppm
P	-10 ppm
B	-5 ppm

However, it was understood by ACA Howe (from Venus) that a few thousand tonnes had been trucked, sold to and tested by SS with satisfactory results. However, when working with Magnum in 2014, Roy Spencer had preliminary discussions with representatives of SS on site, and they suggested that the material that was sent to their facility in Polokwane was not of the same quality as they had tested previously. Therefore, SS had declined to proceed with the business arrangement with Venus.

Based on a preliminary compilation of 1/2500 scale topographic, geological and air photo maps and a visit to the site by ACA Howe in June 2007, an inferred resource of 1.5 million tonnes of quartz was estimated to be present above the level of the roads along the north and south side of Discovery Hill over a strike length of some 450 m and a horizontal map width of +10 m at each end and up to 80 m through the top of the hill, over a relief of about 30 m (ACA Howe, 2007). The structure of the contacts of the quartz and its extent in depth remained to be tested by drilling. It was expected that drilling would convert part of the resource at least, to the indicated category which is a sufficiently high level of confidence for economic planning for extraction.

ACA Howe recommended three drill locations to assess the resource. Due to the topography, it was judged too difficult to drill elsewhere without significant site preparation. However, with some surface work to expose the contacts of the quartz and new geological mapping to locate the contacts and measure the structure of the quartz at surface, it was thought that this would be sufficient drilling for the purposes.

In 2007, ACA Howe visited the site and carried out an informal, pre-drilling resource estimation using Micromine software and available topographic, GPS and geological data to guide the project and plan resource drilling (ACA Howe, 2007).

Venus conducted a small drilling programme in 2009 and estimated the following:

- Based on a stated area of about 5,000 m² and a depth of 20 m, 260,000 tonnes of quartz vein were estimated.
- Based on a stated area of about 20,000 m² and a depth of 3 m, an estimate of 156,000 tonnes of large quartz cobbles and soil was derived.
- Based on a stated area of about 45,000 m² and a depth of 1.5 m, an estimate of 175,500 tonnes of fine quartz cobbles and soil.

From these figures, ACA Howe re-estimated the total (non-JORC2012) resource as very approximately 590,000 tonnes. Without regard to the structure indicated by the drilling results and assuming continuity in width and depth to the base level of the Discovery Pit, Venus extrapolated a further million tonnes of quartz. These later numbers appear to be excessive and have not been verified by ACA Howe.

In December 2009 the results of the drilling of 6 vertical holes into and through the quartz were reported by Barry (2009). No further work has been undertaken on this deposit since this time.

However, this quartz resource if ultimately converted to production, may defray some of the costs of stripping waste off the adjacent emerald bearing schist of Discovery South.
The deposit clearly has some potential as an industrial product and could be revisited with SS if so desired.

14.3 MOLYBDENITE

The granite at Beryl Kop contains scattered molybdenite mineralisation possibly associated with the EBG molybdenum porphyry. This has been commented on by van Eeden in 1939 and recently by M. Wilson. To the best of ACA Howes knowledge, there has never been an assessment of the molybdenite potential of this porphyry. No further information is available to ACA Howe and the potential mineralisation needs investigation.

16. ADJACENT PROPERTIES

Emeralds are found on a number of farms along the southern side of the MGB in the Gravelotte to Phalaborwa area, including Willie 787 LT, Josephine 777 CT, Granville 767 LT, Farrell 781 LT, BVB Ranch 776 LT, Koedoes Rand 790 LT, Alonbridge 768 LT, Esmefour 29 MT, Danie 789 LT and Leeuwspruit 18 LU (Wilson and Annhauser, 1998).

Common beryl is associated with emerald in the above farms and has additionally been found on the farms Selati Ranch 143 KT and Morelag 5 KU in pegmatites in the vicinity of the town of Mica, 38 km on the R526 to the southeast of Gravelotte.

The gemstone chrysoberyl has also been found on the farm Arundel 788 LT near Gravelotte (Coetzee, 1976). Aquamarine has been found (Van Eeden, 1936) on the farms Arundel No 483*, Thankerton No 527* and Willie No 787 LT (* old style farm numbers).

17. INTERPRETATIONS AND CONCLUSIONS

Significant quantities of emerald have been mined from the GEM deposit by past owners. Closely-spaced drill hole data shows continuity of emerald-bearing schist beneath and along strike from the Cobra and Discovery pits. Drilling by Magnum further along strike has demonstrated the exploration potential, particularly to the north-northeast of Cobra North.

Based on the available data, ACA Howe has estimated Inferred Resources of 1.2Mt at 6.4 g/t at Cobra and 0.7Mt at 5.7 g/t at Discovery (where "g" is the equivalent to the weight in grammes of recoverable emerald rough). These emeralds are in historical categories ABC/L, R/L, ABC/S, R/S and V/S (as consigned to the selling organisation in Johannesburg) and "t" is the tonnage of emerald-bearing schist to be processed. This after allowing for a payability factor of 50% from the favourable host rock. Exploration Targets have been estimated at 12 locations.

Given the above, ACA Howe is of the opinion that bulk sampling and near-mine drilling is warranted, as well as drilling along strike of Cobra and Discovery, and at the other Exploration Targets. However, the Property is subject to certain inherent risks, which to some degree apply to all aspects of the international gemstones and/or metals mining industry. These include but are not limited to:

- Gemstone Price Fluctuations: These may be influenced, inter alia, by demand for rough emeralds in the market/industry, actual or expected sales and production cost levels for rough and/or cut emeralds in major producing countries.
- Exchange Rate Fluctuations: Specifically, in relation to the strength of the US$, the currency in which coloured gemstone prices are generally quoted.
- Inflation Rate Fluctuations: Specifically related to macro-economic policies.
- Country Risk: Specific country risks for South Africa include in no particular order: political, economic, legal, tax, operational and security risks.
- Legislative Risk: Potential changes to future legislation pertaining to exploration and mining (tenure, mining activity, labour, occupational health, safety and environmental).
- Exploration Risk: Resulting from the elapsed time between discovery of deposits, development of technically and economically viable feasibility studies to bankable standards and the associated uncertainty of outcome.
- Environmental Risk: The environmental impact to date for the Property is largely limited to activities associated with both historical exploration and historical open pit and underground mining activities. The ultimate development of the Property will inevitably impart positive

aspects on the local economy in respect to employment and the potential for taxation revenues to be used for further social development.

- Development Project Risk: Specifically, technical risks associated with brown-field projects for which current economic studies such as pre-feasibility or feasibility studies have not been completed.

Project-specific risks and opportunities with the further exploration of the GEM Property are as follows:

- The land owner, Peet Cilliers, confirmed to Wes Marais, GM of GEM, that the land claim by the Balapye community (Section 4.3.4) has been settled with the Land Claims Commissioner and that the property has been exempted from the claim. No documentation on the status of the claim is available to ACA Howe.
- The Inferred Resource has been estimated utilising data from past owners of the project. More recent work by Magnum, such as data from geological mapping, Lidar survey and RC drilling was readily available. Records of past production and drilling are incomplete. However, ACA Howe's independent involvement in the project since the early 1980s (intermittently) has proved valuable, both in terms of data availability, and the independence of observations and bulk sampling supervision by J. Langlands.
- ACA Howe has sought to reduce the risk in the Inferred Resource estimate by assigning grades from production data rather than by using drill hole data. In addition, the grade of the Inferred Resource represents a recovered emerald rough grade (including losses) rather than an in-situ grade. Further risks and uncertainties associated with the estimate are described in Section 14.6.

  Up to date survey data showing the underground working is not available. Therefore, ACA Howe has excluded all of the material from above 9 Level at Cobra North. . These upper levels appear to have borne the brunt of much of the post mid 1980's high grading and pillar removal operations undertaken by various miners and as such would not contribute significant volumes to any future resource estimate. Additionally, because of access issues, it would be difficult to access, define and estimate a resource for these levels.
- In any future estimates or eventual mining, it will be necessary to consider all potential deposit types, such as mineralisation that occurs in reaction zones and in structures.
- Tonnages reported are of inferred emerald-bearing schist identified in surface geological mapping and drilling and extrapolated from previously mined emerald mineralisation of the Cobra and Discovery zones, to some extent supported by semi-quantified emerald-bearing drill intercepts (i.e. emerald and beryl grain counts in drill core and percussion drill chips).
- The in situ grade that pre-mining sampling should aspire to understand, is always reduced by the various ore processing techniques to eventually provide a ROM number. The mining process should seek to get as close to the idealised pre-mining grade as possible. The most important of the factors which affect a recovered grade as opposed to an in situ grade is theft.

Note that as theft is always significantly skewed towards larger, better stones, this always has a major impact on all parts of the sampling, mining, processing and marketing areas. However other factors such as mining technique and crusher losses also conspire to move a ROM grade away from the in situ geological grade.

18. RECOMMENDATIONS

ACA Howe is aware that URA is focusing on re-starting mining and processing operations at Gravelotte Emerald Mine (GEM) in a phased approach and aiming to scale up processing and mining operations over time. URA is planning to focus its initial mining activities on the extension of the Discovery and Cobra open pit as identified from the resource estimation work contained in this report. URA is further planning to conduct additional exploration work in the future while in production.

ACA Howe recommends that the following exploration activities are conducted in the future in conjunction with the planned mining and extraction activities.

18.1. EMERALD AND GOLD

A programme of data rehabilitation, compilation, surveying, mapping, trenching, drilling, bulk sampling and emerald assaying is recommended. This programme should include the set-up of an exploration department and an emerald assay laboratory and should be designed to convert portions of the Inferred Resources of emerald-bearing schist to Indicated Resources and to investigate the postulated emerald mineralised areas in the Exploration Targets, at least to the Inferred Resource level.

Both emeralds and gold occur within a complex geochemical environment at the Gravelotte mine and detailed analysis of data contained within a thesis by Whitecross (1993) and other relevant literature and mine records and orientation surveys over known mineralisation are listed in the References List.

Pathfinder elements for both emeralds and gold are noted in the literature. However the stand-out elements which may be useful to map unexposed ultramafic rocks in locally derived soils include Ni, Cr and Co. The important elements which may be useful to map the albite-quartz pegmatoids and their associated hydrothermal alteration and emerald and gold mineralisation in locally derived soils include Au, Mo, W, Be, B, Sb and Hg, as identified by Jaguin et al (2012).

URA will need to establish statistically valid size distribution (and value) sample analyses for both the Cobra and Discovery pits and any future sampling exercises must be undertaken by suitably qualified professionals and must follow international best practices.

18.1.1. BUDGET AND RECOMMENDED 24 MONTH WORK PROGRAMME

ACA Howe makes the following recommendations to be completed over the next 24 months. The items in Phase 1 are recommended to progress towards the next bulk sampling programme and the

first drilling programme, all aimed at developing Inferred Resources into Indicated Resources. ACA Howe believes that these work items will be achievable within URA's budget of USD $1.99 million.

URA has expressed a wish to begin a trial mining programme at GEM. It is understood that the trial mining would be completed over three years in order to firstly test the TOMRA colour-based emerald identification equipment proposed for inclusion in the emerald recovery circuit in the on-site plant, and then to further test the grade and stone value/descriptions of the emerald-bearing schists at the GEM project. ACA Howe believes that a trial mining programme could be achievable in parallel with the recommendations noted below with some flexibility in the various work schedules and budget.

18.1.2. PHASE 1 - PREPARATION

General Recommendations

1. SSR/LIDAR survey to identify old workings away from the known pits especially north and east of Cobra Pit.
2. An initial orientation geochemical survey is necessary prior to investigating the areas north and east of Cobra Pit. This would be followed by surface geochemical sampling for emerald-bearing schists and gold mineralisation.
3. Pump water out of Cobra North pit to expose 10 Level for mapping and in preparation for drilling and bulk sampling.
4. Design and build an emerald laboratory for analysing samples from drilling and bulk sampling.
5. Review the latest technology available for plant recovery. Identify a method which enables the processing of a large volume and to remove waste. Make additions or adjustments to the existing plant if necessary.
6. Security review.
7. Use onsite local granite cobble and gravel from the Quarry Granite to seal sinkholes and dig a sealed central drainage ditch to move rainwater onto a controlled drainage. Place gabions downstream and across creeks.

Update of Geological Mapping

8. Review the pitting programme across the Property but especially within 500 metres of the Willie Granite contact, to measure 'red soil' depth to bedrock, etc and contour these.
9. Clean out and map the network of old drainage ditches to support the regional geological map and to direct rainwater safely into Cobra Creek Dam.
10. Dig, map and sample trenches especially at Discovery Hill and Cobra Far North, but also the previously recommended trenches ahead of mapping and sampling. The extension of geological mapping of Cobra to Discovery Hill to Beryl and Sable Kop is seen as an important activity.

11. Dig mapping trenches on the eastern flank of the EBG and at Discovery West to Cobra South is also required.

Drilling

12. Clear vegetation and clean out line of old vertical WD holes at Discovery West. Locate old drill holes at Cobra North & South, Discovery and Discovery West for potential twinning. Select a limited number of holes for first stage drilling.

Bulk Sampling

13. Identify and prepare bulk sampling sites at Cobra and Discovery.
14. Prepare suitable standard operating procedures for bulk sampling and sampling processing in the onsite laboratory in line with international best practices.

18.1.3. PHASE 2 - IMPLEMENTATION

Phase 2 assumes the implementation and completion of the items outlined in Section 18.1.2, including larger bulk sampling if warranted, drilling and surface geochemical sampling for emeralds and gold. The completion of Phase 2 is not dependent on the results of Phase 1.

Drilling

An estimate of the drilling required in Phase 2, enabling comparison with historical data, validation of the geological model in certain areas and additional information on the controls on mineralisation, is as follows:

- Cobra Pit Area: 1,500 m.
- Cobra Deep: 150 m.
- Cobra South: 200 m.
- Discovery Pit Area: 1,200 m.
- Total: 3,050 m of combined RC and core drilling.

Target Locations and Waste Storage for Bulk Sampling and Eventual Trial Mining:

ACA Howe believes that it is important that areas selected for bulk sampling or trial mining should subjected to appropriate scrutiny. Mapping and testing should be undertaken before large scale work begins. Approximately 100 tonnes should be collected at each bulk sample site. Potential sample site locations are shown in Table 19.

Table 19: Potential bulk sample locations		
Location	**Area**	**Number of Samples**
Cobra	Pit tails	2
	10 Level	2
	Far North	4
	South	1
Discovery	South face	3
	Central zone	3

ACA Howe also suggests that an initial stage of trial mining could include a combination of the collection and processing of easily accessible tailings to assist in the development of the optimum processing techniques, followed by the larger scale mining programme as planned by URA.

However, without detailed bulk sampling or trial mining plans, ACA Howe cannot provide appropriate recommendations for the location of the either bulk sample or trial mining sites at this stage.

A formal programme to map the many emerald dumps located east of the Cobra Pit should be undertaken. A follow-up formal project of testing dumps should begin with using a hydraulic rock breaker mounted on a TLB (or similar), supplemented by hand-held jack hammers. Target material could be passed over a heavy duty mobile grizzly located on site before being transported to the processing plant.

The tailings could be sourced from the following locations:

- The easily accessible tailings may be sourced from the approximately 10,000 tonnes of tails stored in the Cobra North pit. These tails are likely to be derived from the latest emerald production at GEM, possibly partly from the high grade mining in 2001.
- A second target could be the so-called ‘Gupta’ tails and the adjacent dumps, close to the gold slimes tails.
- Analysis of the emerald dumps by J. le Cordier in 2015, indicated that the four largest dumps consist of in excess of 850,000 tonnes of coarse tails, located close to the eastern side of the Cobra North pit. These tails could provide a large tonnage of feed to the plant over several years and are made up of largely unprocessed material too coarse to be easily processed in the plant in use in the 1980’s. The largest of the tails tend to be either granite or quartz-rich boudins (with some MF schist) some of which still display coatings of blackwall, and some of which are obviously mineralised. The unprocessed material (excluding the barren quartz) may well provide emerald grades substantially more representative of the in situ geological grade than

those that were produced by the earlier plants. The selection of large quartz/schist boulders for breaking could be ameliorated by the presence of geological personnel to identify such boulders prior to action.

For the initial testing and trial mining, ACA Howe recommends that considerable thought be given to the placement of waste material. This amount of plant feed will require significant waste to be moved and stored. The only areas where waste can be usefully stored within the Mining Right are east, north and west of the Cobra Pit, and that is only after these areas have been comprehensively investigated geologically.

It is probable that the Mulati Formation exists east of the pit and perhaps up to the boundary with Selati. Until this area is explored adequately for emeralds, no waste should be stored there. Reaction zones are known to exist in the old northern Marais claims to the northeast of the pit.

Similarly for the area north of the pit - the Cobra Far North area. Emeralds are known to be present at least as far north as the water tanks and it is assumed that the emerald-bearing schists will extend along strike at least to the airstrip and possibly further to the eastern boundary fence with Selati. Exploration pitting and trenching should be completed before any decision can be made as to whether the waste could be stored in these areas.

A logical short term area for waste storage is on the Quarry Granite in the area of the Cobra Creek dam. However, adequate allowance will have to be made for the trace of Cobra Creek (which moves runoff from the large source area west of the main access road to the accommodation at the top of the hill), to be adequately accommodated on its easterly course. A suggestion is that the area east of the dam wall be considered initially for waste storage (but only over the granite outcrop) and possibly parallel to the wall, but then a drainage diversion would have to be created for Cobra Creek to continue on its drainage passed the wall.

18.1.4. POTENTIALLY USEFUL TECHNOLOGIES

There are a number of very interesting new technologies on the metallurgical horizon that may have application singly, or together, in a 21st century emerald recovery plant. The first target of any ‘new technology’ would be to identify the mineral beryl, with its low Zeff either resting on a belt or exposed on the surface of a rock on a feed belt or optimally, wholly enclosed in the ore rock. This has obvious advantages in major capital and operating cost savings.

Secondly, there is the issue of being able to release the beryl crystals from the matrix without damaging particularly the larger stones. All of the above to be accomplished out of sight of potential thieves.

Thirdly, and the ‘holy grail’ would be to discover a system capable of identifying emerald crystals completely enclosed in emerald-bearing schist on a moving belt at speeds of up to 50-100 t/hr, then

removing the “pregnant” rocks from the feed belt and allowing the remaining barren waste to be sent directly to waste dumps.
The items noted below may be of some advantage in a modern emerald/beryl circuit.

Selfrag

It appears that this interesting development has lost favour with its original developers in the mining context who are now focussing on the recycling industry. However, one of the early Selfrag proponents and Selfrag employee (now consultant and based in the UK) Dr Daniel Parvaz, is keen to reinvigorate the mining connection.

The system as it works at present involves subjecting electrical charges to ore at high voltages. This has the effect of creating micro fractures throughout the ore which, when subjected to relatively benign crushing/disaggregation such as with a trommel or SAG mill, in practices allows for the non-destructive release and recovery of say emeralds, hence overcoming 1 of the repeated issues of crushing emerald ore, that being damage to the largest and hence most valuable stones.

Sitoro

The Australian company has developed cutting-edge XRT scanning technology that provides high speed, high-resolution transmitted X-ray attenuation images along with accurate an increased ability to measure the effective atomic number (Zeff). This may help to identify emeralds wholly hidden in schist and thus provide a means of separating emerald-bearing schist from barren rock well before ROM reaches a crusher.

Colour Sorters

URA have already set up a line of communications with TOMRA in Hamburg in connection with using colour sorters to ID emerald on low throughput feed belts. This technology works well on small throughput systems but can be expanded with the addition of additional units. ACA Howe has reviewed the system used by TOMRA in Germany recently in the context of the schist samples sent to them by Magnum and have concluded that the system has distinct merit for the ore processing at GEM.

Solar Panels

Solar panels that cover an entire pre-existing roof in sheets of solar cells are now commercially available from EU suppliers and are easy to fit to any sized/shaped roof.

Berylometer

In the 60’s portable berylometers were developed to identify beryl minerals in rock outcrops. These instruments were successful but are no longer commercially available. However, a US company ‘Materion’ is apparently using them in some newer form in their beryllium recovery flow sheet to identify beryl minerals.

LIBS

Laser induced breakdown Spectroscopy (LIBS) is 1 of the few techniques in common use currently which can provide on-site rock analyses for beryllium. Commercial products are available from Niton, Vulcan and SciAps. These handheld analysers are ideal for near instantaneous identification of exposed Be-rich minerals, emerald, beryl, phenakite, in outcrop and hand sized specimens.

18.2. SILICA/QUARTZ

This is a significant quartz deposit and efforts should be made to re-introduce the deposit to Silicon Smelters in Polokwane and to hopefully redress the issues that SS had with the previous mine owners in the past. The following recommendations are made:

1. However, a short retest of the chemistry of the quartz outcrop collected by an unbiased professional group and tested at a professional laboratory should be undertaken as a first step.
2. Armed with a positive set of analyses, URA should then make contact with SS and provide them with these results and to re-establish their interest.
3. Assuming a positive result from point 1), and as noted above, it will be essential to confirm and reinterpret the drilling results reported by Barry (2009) and to determine whether these can be used to further define the deposit in 3 dimensions and refine the revised ACA Howe inferred resource estimate.
4. Core drilling in massive quartz will be an expensive affair so it is recommended that a wagon or some other relatively inexpensive drill be used for this. However, for transparencies sake, the drill programme will need to the supervised and sampled by a group independent of URA.

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20. COMPETENT PERSON'S STATEMENT

A.C.A. HOWE INTERNATIONAL
Mining and Geological Consultants

Competent Person's Report on the Gravelotte Emerald Mine in South Africa by ACA Howe International Limited (dated 6th December 2023).

I, Roy Spencer FAusIMM, MGSSA, confirm that I am the Competent Person for the CPR and:

- I have read and understood the requirements of the 2012 Edition of the Australasian Code for Report of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 Edition).
- I am a Competent Person as defined by the JORC Code 2012 Edition, having five years' experience that is relevant to the style of mineralisation and type of deposit described in the CPR, and to the activity for which I am accepting responsibility.
- I am a Fellow of The Australasian Institute of Mining and Metallurgy.
- Neither ACA Howe nor any of the authors of this Report, have any material present or contingent interest in the outcome of this CPR, nor do they have any pecuniary or other interest that could be reasonably regarded as being capable of affecting their independence or that of ACA Howe.
- ACA Howe has no beneficial interest in the outcome of the technical assessment being capable of affecting its independence. ACA Howe's fee for completing this CPR is based on its normal professional daily rates plus reimbursement of incidental expenses. The payment of that professional fee is not contingent upon the outcome of this CPR.
- ACA Howe is not a sole trader and is qualified under the ESMA Recommendations to provide such reports for the purposes of inclusion in public company prospectuses and admission documents.
- ACA Howe has given and has not withdrawn its written consent for this CPR to be used for the purposes of URA Holdings plc's prospectus, including publication on Cobra's website. This consent also covers the inclusion of statements made by ACA Howe and references of its name in other documents pertaining to URA Holdings plc's prospectus.
- ACA Howe provides this consent on the basis that the technical assessments expressed in the Summary and in the individual sections of this CPR be considered with, and not independently of, the information set out in the complete CPR and the Cover Letter.

- ACA Howe confirms that to the best of its knowledge and belief (having taken all reasonable care to ensure that such is the case), the information contained in this CPR is in accordance with the facts and does not omit anything likely to affect the import of such information.
- ACA Howe confirms that nothing has come to its attention to indicate any material change to what is reported in this CPR. ACA Howe also confirms that it has reviewed the information contained elsewhere within the documentation of the URA Holdings plc's prospectus relating to the information contained within this CPR and confirms that the information presented is accurate, balanced, complete and not inconsistent with this CPR.

[SIGNED AND SEALED]
{Roy Spencer}

Roy Spencer, FAusIMM, MGSSA