PALAEONTOLOGICAL MONITORING REPORT ON THE COLLIERY PIT AND WASTE ROCK STOCKPILES (VAALBULT COLLIERY) LOCATED ON THE FARM VAALBULT 31T, MPUMALANGA PROVINCE

10 February 2016

Prepared for:
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Prepared for:

Vaalbult Mining Company (Pty) Ltd

Prepared by:

Prof B Millsteed

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EXECUTIVE SUMMARY

Vaalbult Mining Company (Pty) Ltd owns and operates a colliery on the farm Vaalbult 31T, Gert Sibande District Municipality, located west of Carolina, Mpumalanga Province. The South African Heritage Resources Agency (SAHRA) has instructed Vaalbult Mining Company (Pty) Ltd [SAHRA document Ref: 16/5/1 Vaalbult Mining Project; dated 13 February 2014] that on-site checks for the occurrence of any fossils of the excavated pit and stockpiled material are required every six months by an experienced Karoo palaeobotanist. The frequency of these checks will be assessed after six months based on the findings and the planned mining programme. The Karoo palaeobotanist must submit a monitoring report to SAHRA on this work.

In compliance with the SAHRA instruction, this report documents the results of a palaeontological monitoring program site visit conducted by Prof B. Millsteed on the 15th of January 2016. Prof Millsteed was accompanied by Ms E. Nethavhani of Vaalbult Mining Company (Pty) Ltd and Mr W. Van der Merwe, a representative of the contract mining company employed by Vaalbult Mining, who facilitated the access to all those areas that were required. Vaalbult Mining Company made no restrictions concerning the location of areas to be investigated and access was freely available to Prof Millsteed to inspect wherever he desired.

The site visit revealed that the Vaalbult Colliery mining operations impact directly upon strata of the Early Permian Vryheid Formation, Karoo Supergroup. This unit is known to be richly fossiliferous elsewhere in its extent; common fossils within the unit include plant macrofossils and trace fossils. The stratigraphic succession within in the Vaalbult Colliery consists of eight distinct lithofacies (named units A-H herein, but is dominated by the two coal seams that are economically exploited by the colliery; the seams are the upper-most D Seam (unit E) and the underlying E Seam (unit A). E seam constitutes the base of the colliery pit in all area observed and appears to be uniformly distributed throughout the pit. The sedimentary sequence separating the two seams varies between 11.5 m and 12.5 m in thickness (the thickness deceases towards the west) and consists of a ca. 30 cm thick buff coloured, tabular sandstone unit (unit B). Overlying this sandstone is approximately 2 m of black, thinly laminated, carbonaceous mudstone and then ca. 9-10 m of buff coloured sandstone (unit C). Overlying D seam is ca. 8 m of thinly laminated, black carbonaceous mudstones (unit F), and the ca. 2 m of pale sandstone (unit G). A thin layer of light brown regolith tops the sequence (unit H).

The strata examined within the mine pit and associated waste rock stockpiles are fossiliferous. Carbonaceous compressions of large fragments of plant trunk were located within rocks attributed to unit B and the basal sections of unit C. These plant fossils were identified as belonging to the Sphenophyta, but could not be identified further. Numerous fossils of the ichnogenus *Skolithus* and a poorly preserved, branching, horizontal, tubular ichnogenus tentatively identified as cf. *Scolicia* were located in sediments ascribed to unit B, the base of unit C and the base of unit F. None of the

fossils (plant macrofossil or trace fossils) identified are palaeontologically significant and require special preservation or excavation.

The lithological succession of the Vaalbult Colliery is fossiliferous and due care needs to be exercised to ensure that the palaeontological heritage of the area is not diminished by the mining activities. That said, the strata being mined by the colliery occur beneath a uniformly thick regolith horizon and do not crop out. The absence of bedrock outcrop means that no fossils are observable at surface. As a result, it is only due to the ongoing mining activities that the fossiliferous strata are exposed and made available for scientific study. None of the fossils located during the study are of sufficient palaeontological significance that their excavation by a palaeontologist or their preservation is required, but this may not always be the case.

The possibility of the presence of palaeontologically significant fossils within the rocks of the colliery remains a possibility. The greatest potential for the presence of significant plant macrofossils is in the lower-energy lithofacies represented by units C and F. It is accordingly recommended that a member of staff (e.g., the Environment Officer) of the Vaalbult Mining Company (Pty) Ltd be trained to recognise the types of fossils that may be exposed via the mining operations. This officer should:

- Make regular inspections of newly exposed rock material following blasting to identify if scientifically significant fossils have been exposed.
- If potententially significant fossils are present, they should be collected and placed in a safe, protected area for storage.
- While the fossils are collected, precise notes of the location they were collected from must be collected, as well as the lithological unit containing the fossils.
- An experience Karoo palaeobotanist must be mandated by the colliery to inspect the fossils, ascertain their significance and to make any necessary recommendations concerning their preservation.
- The six monthly examinations of the colliery pit and waste rock stockpiles by an experience Karoo palaeobotanist should continue subject to later review.

1 INTRODUCTION

Vaalbult Mining Company (Pty) Ltd owns and operates a colliery on the farm Vaalbult 31T, Gert Sibande District Municipality, located west of Carolina, Mpumalanga Province. The South African Heritage Resources Agency (SAHRA) has instructed Vaalbult Mining Company (Pty) Ltd [SAHRA document Ref: 16/5/1 Vaalbult Mining Project; dated 13 February 2014] that on-site checks for the occurrence of any fossils of the excavated pit and stockpiled material are required every six months by an experienced Karoo palaeobotanist. The frequency of these checks will be assessed after six months based on the findings and the planned mining programme. The Karoo palaeobotanist must submit a monitoring report to SAHRA on this work. In compliance with the SAHRA instruction, this report documents the results of a palaeontological monitoring program site visit conducted by Prof B. Millsteed on the 15th of January 2016.

2 LOCATION

Vaalbult Colliery is located on the farm Vaalbult 31T, Gert Sibande District Municipality, located west of Carolina, Mpumalanga Province. The Mining lease lies approximately 10 km west of the town of Carolina and 28 km northeast of Hendrina (Figure 1). The approximate corner points (see Figure 1) of the Mining Right area are provided in Table 1.

CORNER POINT	LATITUDE	LONGITUDE
A	-26.062385	30.008051
B	-26.091515	30.020978
C	-26.098911	30.999122
D	-26.093777	30.983943

Table 1: Approximate latitude and longitude of corner points of the Vaalbult Colliery Mining Right boundary. The coordinates are provided in geographic format, WGS84 datum.

3 RELEVENT EXPERIENCE

Prof Millsteed holds a PhD in palaeontology and has previously been employed as a professional palaeontologist with the Council for Geoscience in South Africa. He is the principle of BM Geological Services and has sufficient knowledge of palaeontology and the relevant legislation required to produce this Palaeontological Monitoring Report. Prof Millsteed is registered with the South African Council for Natural Scientific Professions (SACNASP; Reg. No. 400332/07), is a member of the Palaeontological Society of South African and is a fellow of the Geological Society of South Africa.

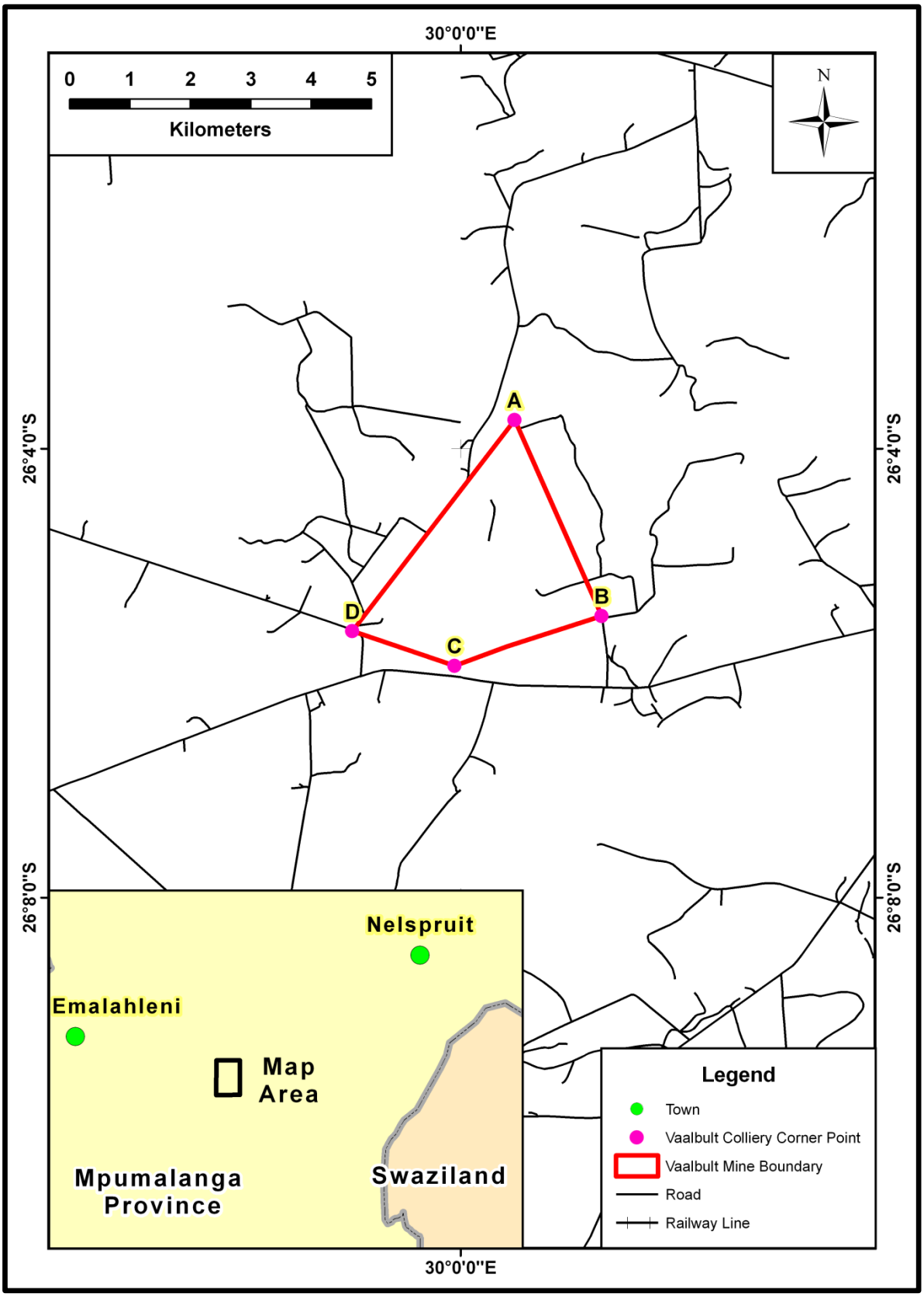

Figure 1: Location map of the Vaalbult Colliery. Shown, as the purple circles are the approximate corner points of the Mining Right area, the co-ordinates for these points are provided in Table1.

4 ACCESS AND INDEPENDENCE

Prof Millsteed was contracted as an independent consultant to conduct this palaeontological monitoring study, and compile the present report, and shall receive fair remuneration for these professional services. Neither Prof Millsteed nor BM Geological Services has any financial interest in the Vaalbult Colliery, the Vaalbult Mining Company (Pty) Ltd nor any companies or individuals associated with the project.

No restrictions concerning the location of areas to be investigated were made by Vaalbult Mining Company and access was freely available to Prof Millsteed to inspect wherever he desired. Vaalbult Mining Company (Pty) Ltd provided all support staff and made all safety and access arrangements required to inspect the areas selected by Prof Millsteed. The colliery pit voids are working mine sites and some areas were under water cover that was too deep to allow access to the high walls, but this is a normal circumstance. This said, a representative portion of the pit high walls were able be visited and documented in each of the mines working cuts.

5 METHODOLOGY

The Vaalbult Colliery was visited and inspected by Prof Millsteed on the 15th of January 2016. Prof Millsteed was accompanied by Ms E. Nethavhani of Vaalbult Mining Company (Pty) Ltd and Mr W. Van der Merwe, a representative of the contract mining company employed by Vaalbult Mining, who facilitated the access to all those areas that were required. Vaalbult Mining Company (Pty) Ltd imposed no restrictions concerning the location of areas to be investigated were made by; access was freely available for Prof Millsteed to inspect wherever he desired.

All sites inspected were visited on foot. The locations where detailed observations and photographs were made were recorded as waypoints using a hand-held GPS (Figure 2). The investigation was conducted within cuts 16 and 17 of the colliery, a series of waste rock dumps in which the rock material was being mined from cut 24 at the time of the visit (waypoints Val12 and Val13, Figure 2) and waste rock dumps (waypoints Val01 to Val05, Figure 2). The waste rock in the later five locations had been mined early in the mines development and its exact provenance within the colliery is unknown.

6 GEOLOGY

Figure 3 shows that the project area is completely underlain by rocks of the Early Permian Vryheid Formation. A summary of the characteristics of the Vryheid Formation in general, the strata present within the Vaalbult Colliery open pit, and their fossiliferous content and potential follows.

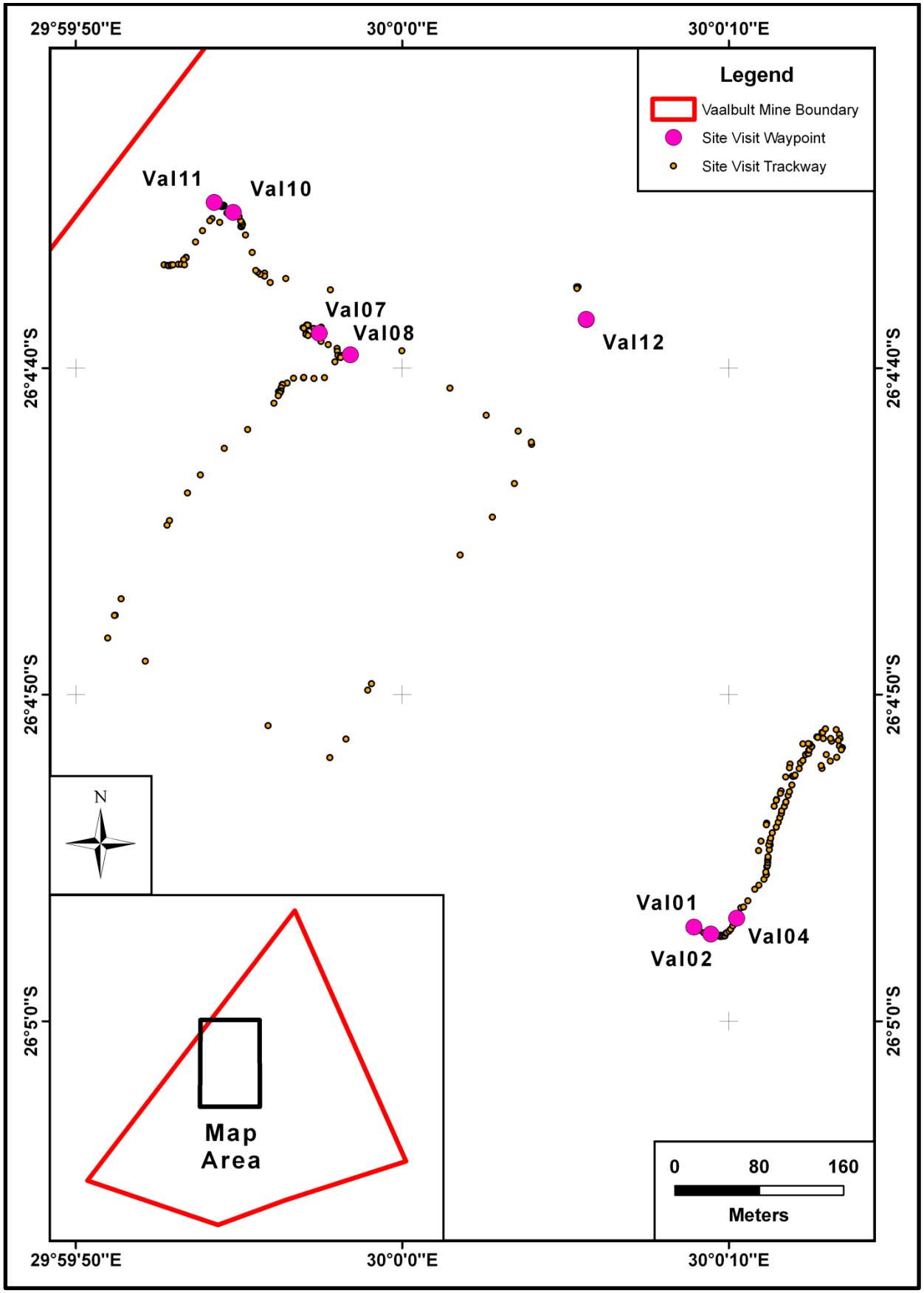

Figure 2: Map showing the location of the GPS trackway and waypoints showing the areas examined during the site visit on the 15th of January 2016

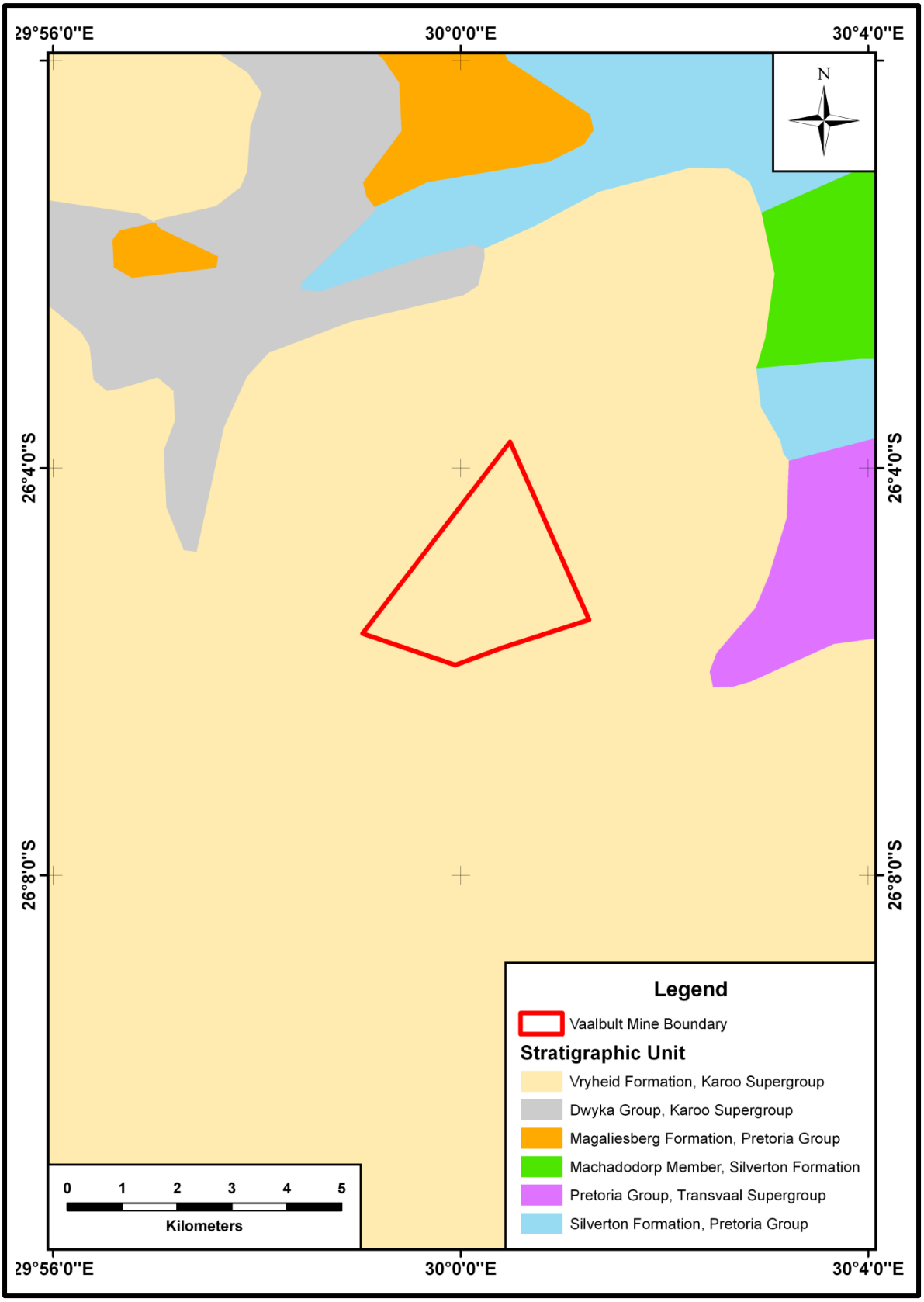

Figure 3: Geological map of the area underlying the Vaalbult Colliery Mining Right area and its immediate environs.

6.1 Vryheid Formation

The Main Karoo Basin consists of a retro-arc foreland basin filled with a lithological succession ranging in age from the Late Carboniferous to the Middle Jurassic (Johnson *et al*., 2006). The basin-fill sequence wedges out northwards over the adjacent Kaapvaal Craton.

In the Main Karoo Basin of South Africa the Vryheid Formation is a sandstone and coal-rich stratigraphic unit that interfingers with (i.e., is transitional with and partially time equivalent to) the overlying Volksrust and underlying Pietermaritzburg Formations; both of which are both are predominantly argillaceous (Figure 4). In terms of environment of deposition, the formation can be divided into lower fluvial-dominated deltaic interval, a middle fluvial interval (the coal-bearing zone) and an upper fluvial-dominated deltaic interval (Johnson *et al*., 2006). The thickness and frequency of the sandstone units increases from the base of the formation, reaching their maximum in the middle fluvial interval and then decrease again towards the overlying Volksrust Formation. To the south and southeast, the Vryheid Formation grades laterally into undifferentiated, deep-water argillites of the Ecca Group (Figure 4).

The Vryheid Formation is one of sixteen (16) recognised stratigraphic units that constitute the Permian Ecca Group. During the deposition of the Ecca Group the basin was dominated by a large sea (the salinity levels of this water body remain unresolved). The exception to this model was the deposition of the coal-bearing strata of the Vryheid Formation along the northern margin during an episode of deltaic progradation into the basin.

Deposition of the Vryheid Formation was terminated by a basin-wide transgression that drowned the Vryheid deltas and their coal swamps resulting in the deposition of the deep-water sediments of the Volksrust Formation. The investigation of the project area did not identify any outcrops of bedrock, the entire area being covered by Cenozoic Regolith.

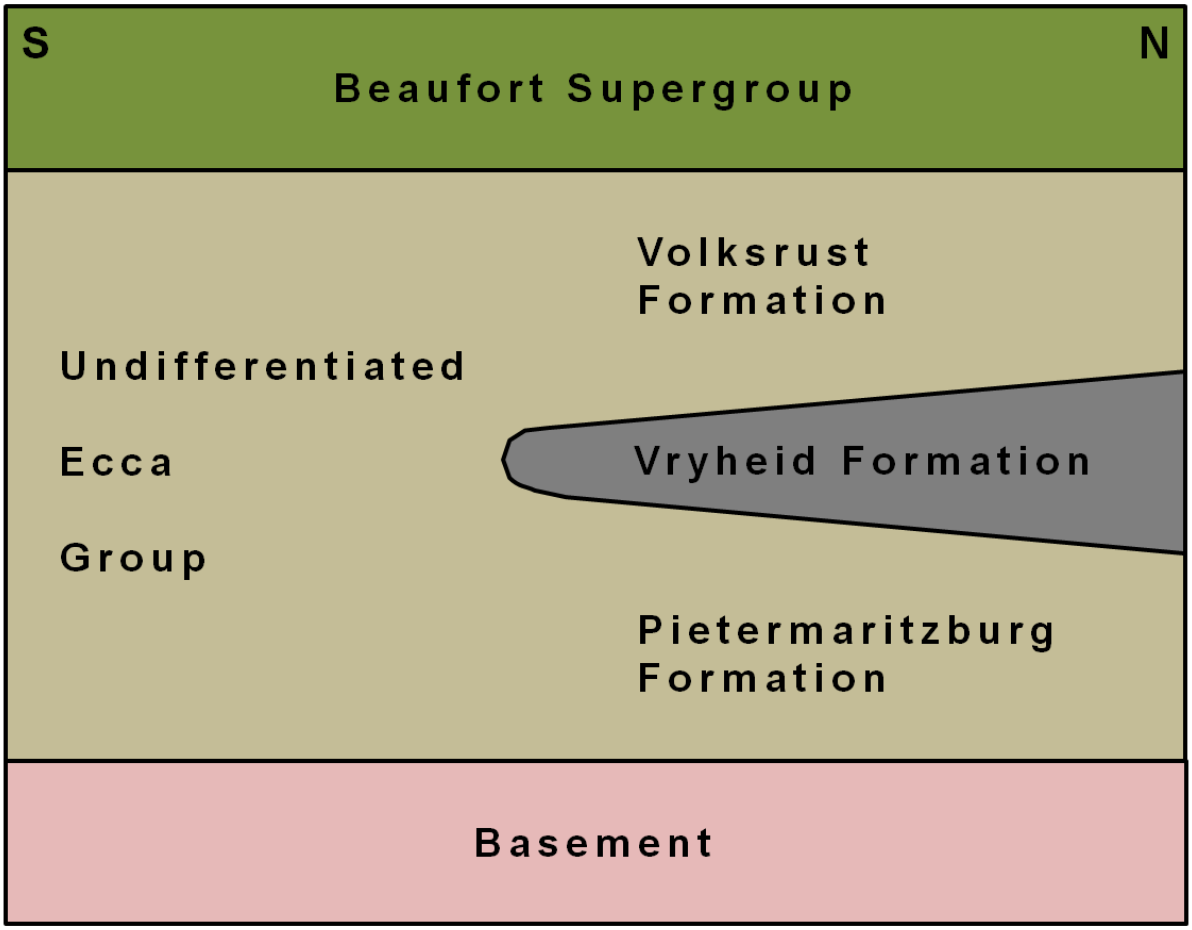

Figure 4: Schematic north-south oriented stratigraphic section of the Ecca Group in the northeast corner of the Karoo Basin. The Volksrust and Pietermaritzburg Formations can only be recognised when the Vryheid Formation forms part of the vertical sequence. In the north and north-western portions of the basin, the Pietermaritzburg Formation was not deposited and the coal-bearing strata of the Vryheid Formation rest directly upon the basement.

6.2 Geology of the Vaalbult Colliery

The lithological succession observed within the colliery pit is outlined below in Table 2.

Lithological Unit	Code
Regolith	H
Brown sandstone	G
Carbonaceous mudstone	F
D seam	E
Buff sandstone	D
Carbonaceous mudstone	C
Buff sandstone	B
E seam	A

Table 2: Lithological succession observed within the Vaalbult Colliery pit. The code indicated is the letter code used to identify the individual lithological units in the text and in Figures 7-9.

The stratigraphic sequence observed in the mine pit is dominated by the two coal seams that are economically exploited by Vaalbult Colliery. These two coal seams are the upper-most D Seam and the underlying E Seam (unit A). E seam constitutes the base of the colliery pit in all area observed and appears to be uniformly distributed throughout the pit. On the other hand, D Seam (unit E) was observed to be a predominantly mudstone-rich horizon in the section of the pit examined, but contains numerous thin, discontinuous coaly stringers (Figure 5). The D Seam is apparently better developed elsewhere in the mine. The sedimentary sequence separating the two seams varies between 11.5 m and 12.5 m in thickness (the thickness deceases towards the west).

Immediately above E Seam is a ca. 30 cm thick buff coloured, tabular sandstone unit (unit B). Overlying this sandstone is approximately 2 m of black, thinly laminated, carbonaceous mudstone and then ca. 9-10 m of buff coloured sandstone (unit C; Figure 6). Overlying D seam is ca. 8 m of thinly laminated, black carbonaceous mudstones (unit F), and the ca. 2 m of pale sandstone (unit G). A thin layer of light brown regolith tops the sequence (unit H). The strata comprising the sequence of rocks from unit A to unit G dip gentry to the west (Figures 10-11). Accordingly, as D seam (unit E) occurs very close to the surface within the mine pit is should not be expected to be present east of the pit cuts 16 and 17 (unless there is down thrown blocks due to faulting in that area).

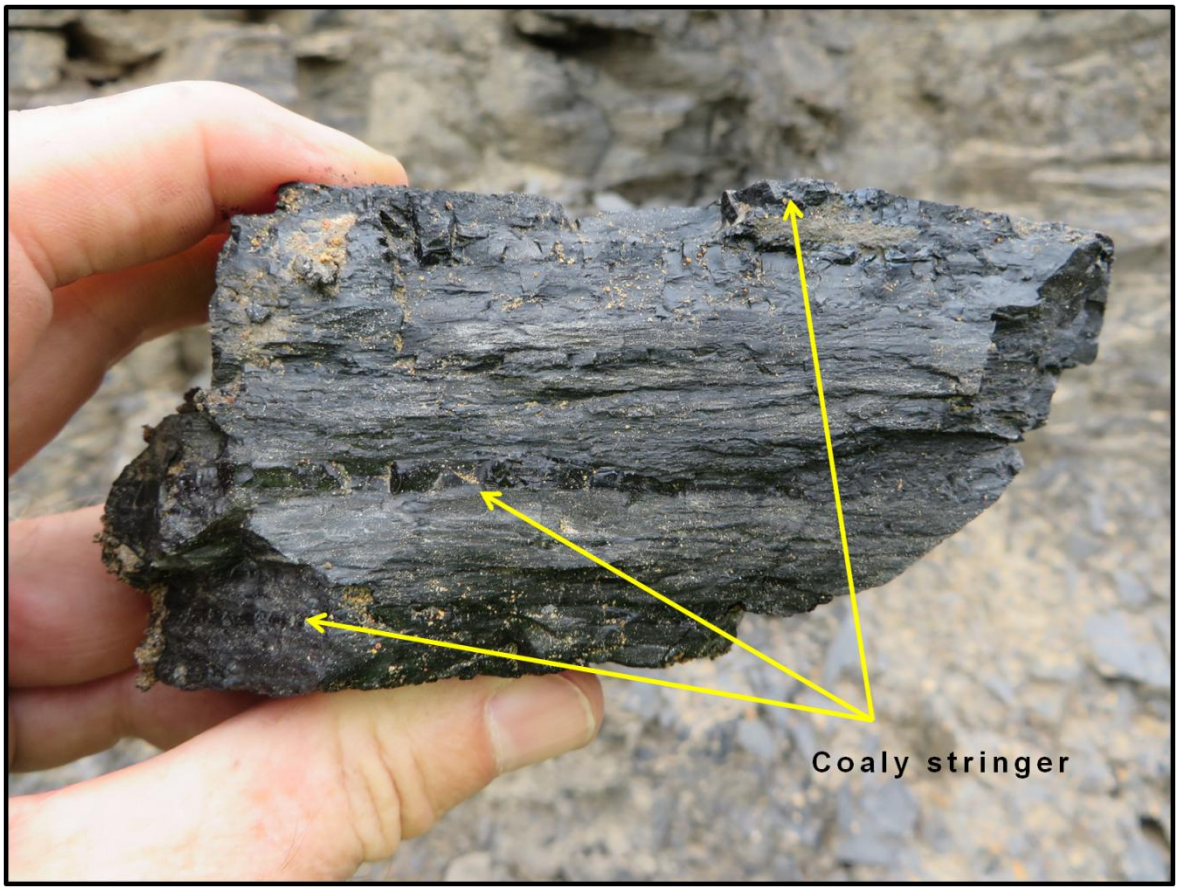

Figure 5: Photograph of the black, carbonaceous shale that comprise D Seam (unit E). Shown also are the thin, discontinuous coaly stringers that represent the coal seam in this area (waypoint Val10, Figure 2).

Figure 6: Photograph of the black, carbonaceous mudstones that comprise unit C (waypoint Val07, Figure 2).

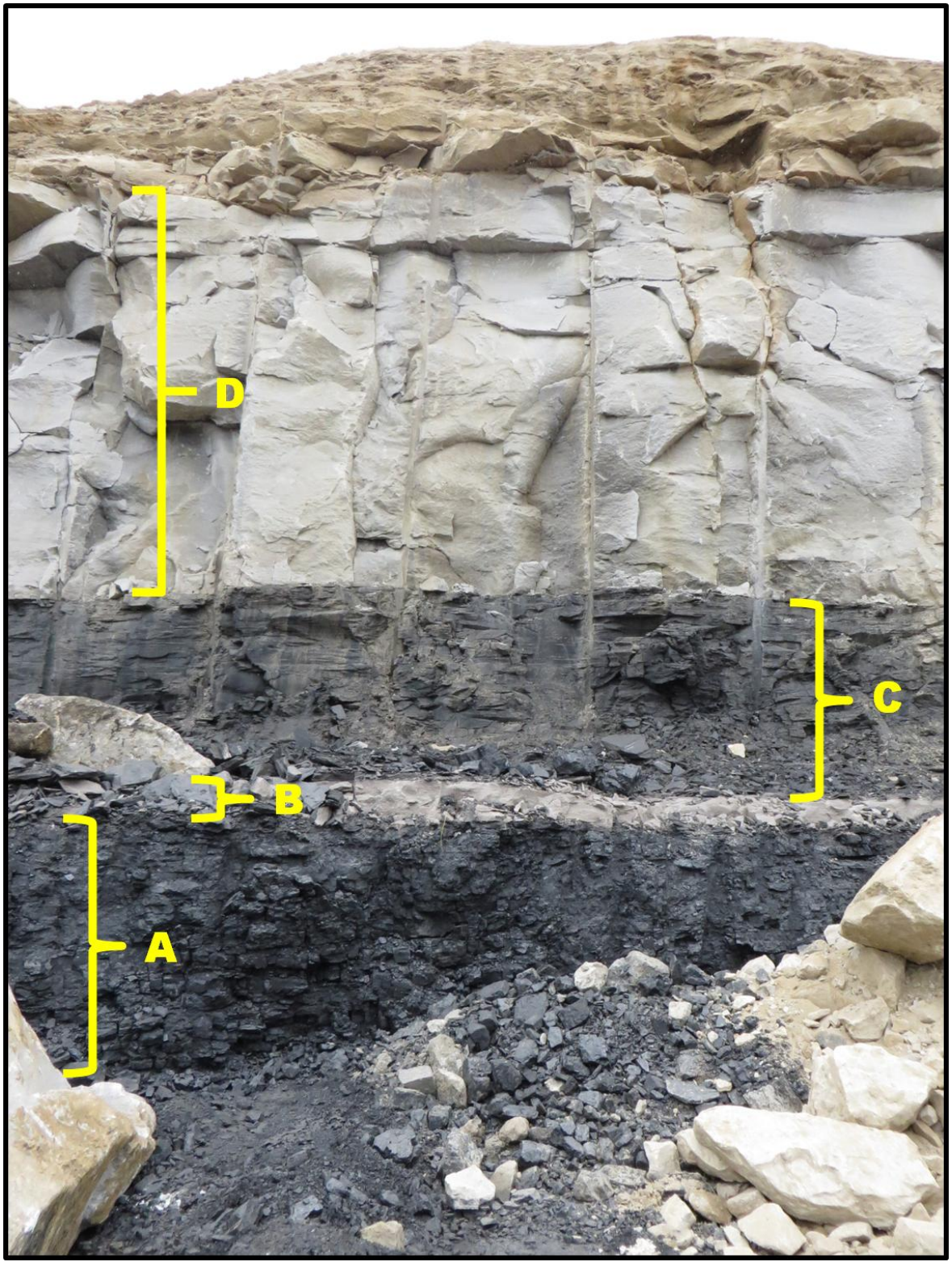

Figure 7: Photograph of the mine pit highwall in cut 16 showing the vertical distribution of lithological units within the cut (waypoint Val08, Figure 2). The labels (A-D) represent the codes used for the lithological units presented in Table 2.

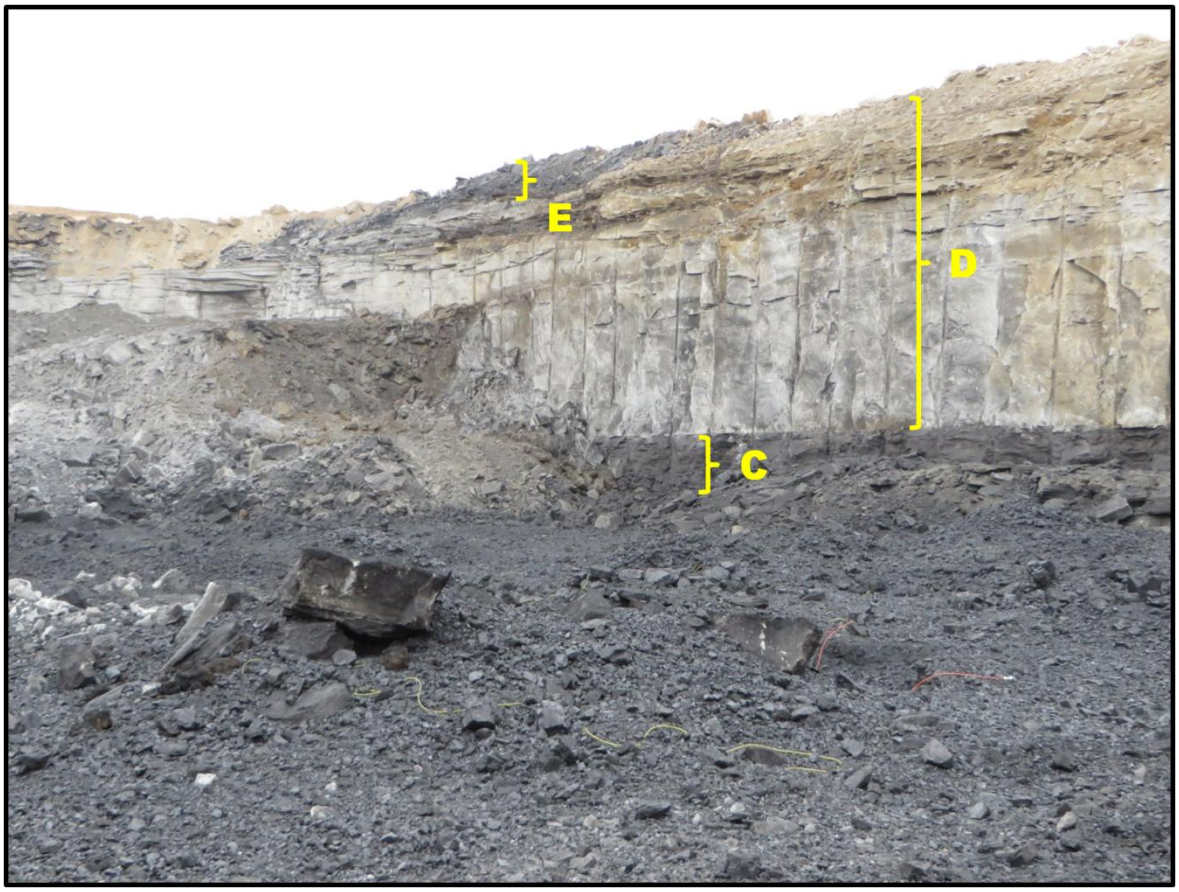

Figure 8: Photograph of the mine pit highwall in cut 17 showing the vertical distribution of lithological units within the cut (waypoint Val10, Figure 2). The labels (A-D) represent the codes used for the lithological units presented in Table 2. Cut 17 is located immediately NW of the view shown in Figure 5 and is the cut located above the top of the highwall in Figure 5.

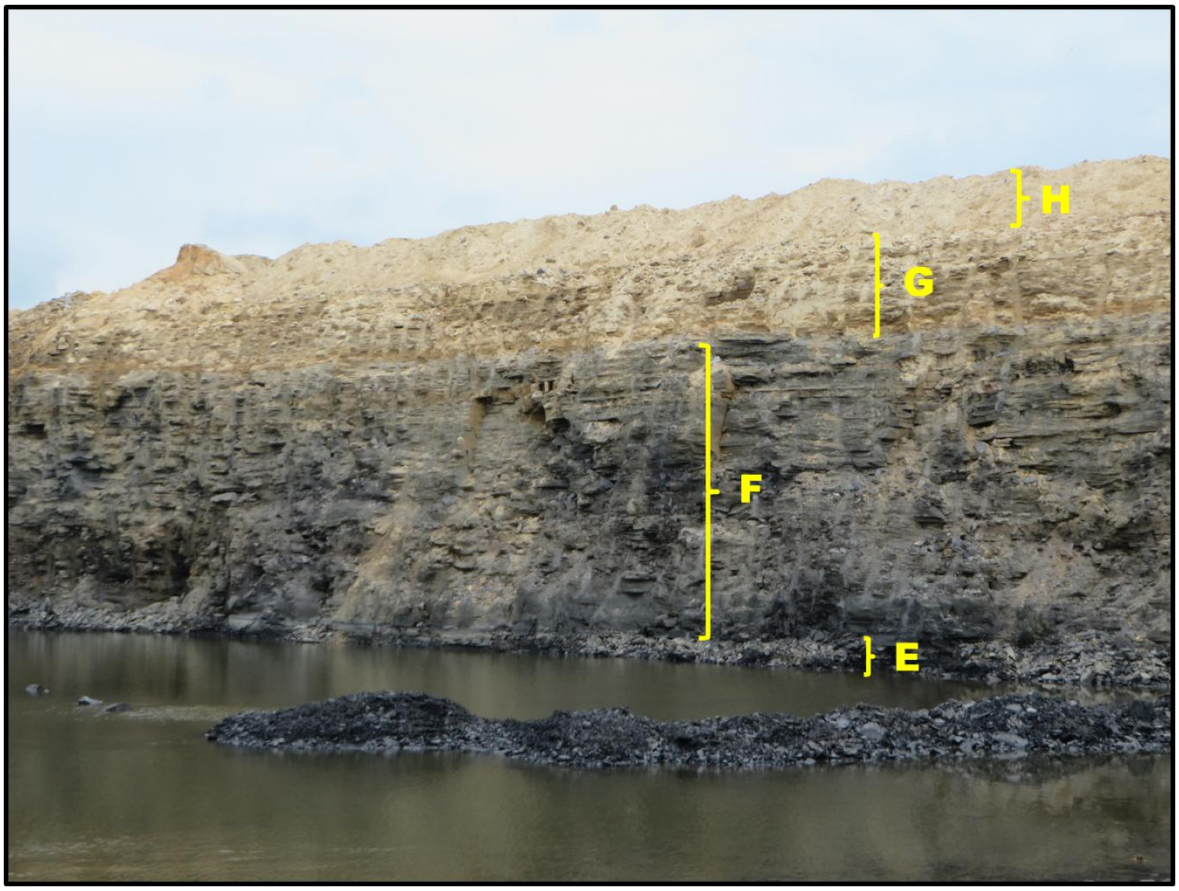

Figure 9: Photograph of the mine pit highwall in cut 17 showing the vertical distribution of lithological units within the cut (waypoint Val10, Figure 2). The strata shown in Figure 6 are located immediately to the right of this view. The labels (A-D) represent the codes used for the lithological units presented in Table 2.

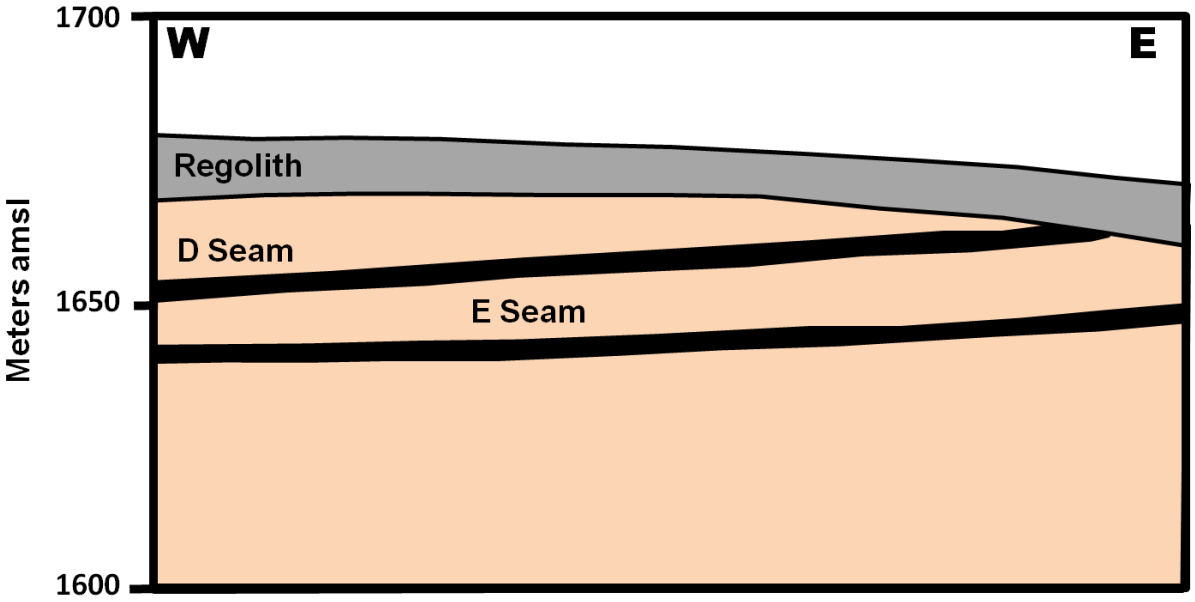

Figure 10: Schematic E-W oriented geological cross section across the central western section of the Mining Right area, and approximately in the same location as the mine pit (data obtained from the client). The location of the cross-section is provided in Figure 11.

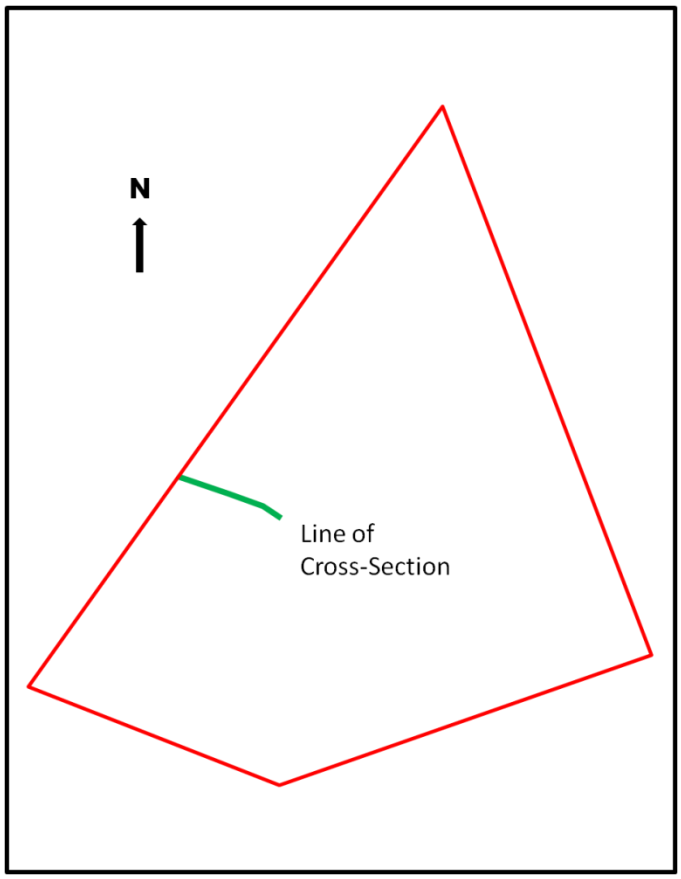

Figure 11: Map showing the location of the geological cross-section shown in Figure 10.

6.3 Palaeontological potential

6.3.1 Palaeontology of the Vryheid Formation

The most conspicuous and common components of the palaeontological record of the Ecca Group in general are the plant macrofossils of the *Glossopteris* flora. Two large and conspicuous leaf form taxa dominate the *Glossopteris* flora, these being *Glossopteris* and *Gangamopteris*. Within the upper Ecca (containing the Vryheid Formation) *Gangamopteris* has ceased to occur with only *Glossopteris* present (Anderson and McLauchlan, 1976). The palaeobotanical record of the Ecca Group is diverse and the literature describing it is voluminous (numerous papers having been published by E. Plumstead, H. Anderson, J. Anderson, E. Kovaks-Endrődy and M. Bamford amongst others). A comprehensive review of the flora in the Karoo Basin literature is, accordingly, beyond the scope of this study, but a thorough review of the palaeobotanical content of the Ecca Group in general and the Vryheid Formation in particular is presented in Bamford (2004). In that summary, it is indicated that the Vryheid Formation can be expected to contain the plant macrofossils *Buthelezia*, *Sphenophyllum*, *Rangia*, *Phyllotheca*, *Schizoneura*, *Sphenopteris*, *Noeggerathiopsis*, *Taeniopteris*, *Pagiophyllum* and *Benlightfootia* and the wood taxa *Australoxylon* and *Prototaxoxylon*. In addition to the above records can be added the observations of Tavener-Smith *et al*., (1988) where it was noted that both *Glossopteris* and *Vertebraria* occur within the palaeontological record of the formation.

In portions of the formation that are typified by low thermal alteration, abundant assemblages of palynomorph plant microfossils (including acritarchs) can be expected (Anderson, 1977).

Jubb and Gardiner (1975) report the presence of fragmentary fish fossils within the Ecca sequence of southern Africa, these being *Coelacanthus dendrites* from the Somkele coal-field of northern Natal and *Namaicthys digitata* from correlative strata in the Senge Coal-fields of Zimbabwe. While fish faunas are obviously rare and none have been reported from the Vryheid Formation the possibility remains that they may be present.

Animal body fossils are rare within the Ecca Group in general (excepting the time equivalent faunas of the Whitehill Formation). However, no reptile fossils have been identified within the Vryheid Formation.

Hobday and Tavener-Smith (1975) reviewed trace fossil assemblages identified within the Vryheid Formation. Within that fossil assemblage, they identified two forms (*Helminthiopsis* and *Taphrelminthopsis* within horizontally laminated siltstones and mudstones that represent part of the deep water *Nerites* community.

6.3.2 Palaeontology of the Vaalbult Colliery

Two district groups of fossils were identified within the sedimentary strata that comprise the Vaalbult Colliery highwalls exposed in cuts 16 and 17 and various waste rock stockpiles. The fossil assemblages consist of plant macrofossils as well as a trace fossil assemblage.

6.3.2.1 Plant macrofossils

Scattered plant fossil materials were identified in the waste rock stockpile located at the waste rock stockpile at waypoint Val02, and at waypoints Val12 and Val13. These later two waypoints constitute rock material that was being removed from cut 24 (Figure 12) at the time of the site visit, and constitutes rock strata overlying E Seam (unit A) and underlying D seam (unit E). Unfortunately, the stratigraphic provenance of these fossil materials cannot be accurately determined, as they were located within rock material that had been mined; unfortunately, cut 24 was not visited due to time constraints as they were discovered at the end of the working day. However, the fossils are present within a buff to white coloured sandstone that is very similar to unit B. The plant fossils consist of large, unbranched carbonaceous compressions (Figures 13-15) of plant stems with 30 cm long and 7 cm wide (waypoint Val12) and 50 cm long and 7 cm wide (Val13) specimens being measured. The compressions occasionally bear an ornamentation of fine, narrowly spaced striations that run parallel to the long axis of the fossils (Figure 14). The presence of these striations suggests that the fossils belong to the Sphenophyta. It is apparent, based on the rock type of unit B as well as the large size of the original plant logs that this unit represents a high-energy environment. No fossils attributable to leaves, fructifications or inflorescences were located; but this is probably a reflection of the high-energy environment of deposition represented by the sandstones. The fossils are not palaeontologically significant due to their imprecise identification.

6.3.2.2 Trace fossils

Trace fossils representing burrows of two types were identified within the sedimentary rocks of the mine sequence. These fossils are a) closely spaced, unbranching, vertical, tubular burrows identified as the ichnogenus *Skolithus* and b) branching or bifurcating horizontal burrows tentatively identified as the ichnogenus cf. *Scolicia*.

The fossils identified as the ichnogenus *Skolithus* (Figures 16-17) are overwhelmingly the dominant ichnogenus recognised at the colliery and consist of vertical tubes up to 0.75-3 cm in cross-section diameter with a well-defined, circular inner tube in-filled with lighter coloured sandstone than the outer ring. These fossils occur within medium-grained buff to white sandstone or similar sandstones containing abundant coarse grained organic matter fragments oriented parallel to bedding within: the waste rock

Figure 12: Photograph showing the excavations in cut 24. The coal seam being exploited is the D Seam. The waste rock material examined at waypoints Val 12 and Val 13 contain material from the stratigraphic interval lying between the D Seam and the E Seam.

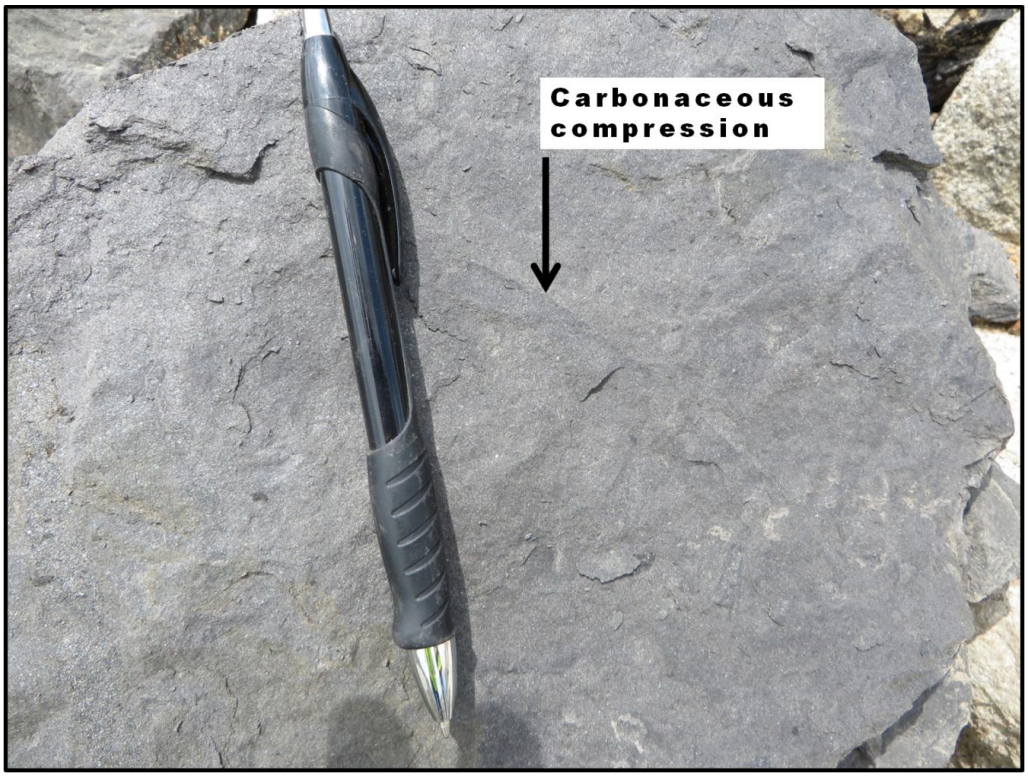

Figure 13: Carbonaceous compression of a plant stem (waypoint Val02, Figure 2).

Figure 14: Striated carbonaceous compression of a plant stem (waypoint Val12, Figure 2).

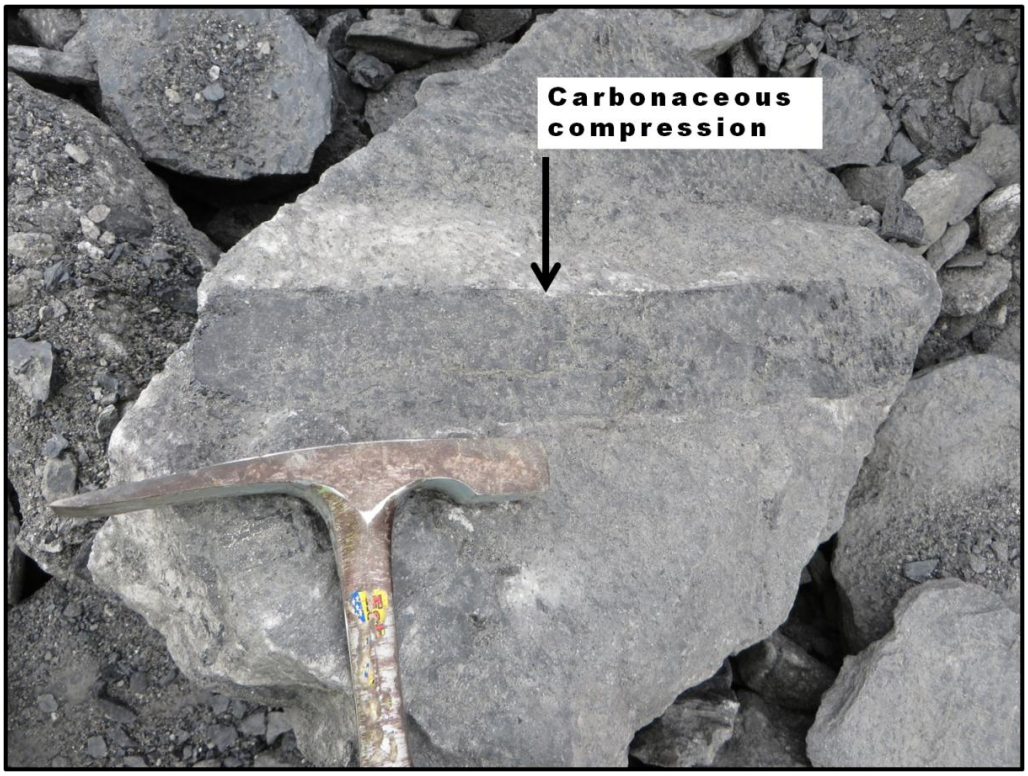

Figure 15: Carbonaceous compression of a plant stem (waypoint Val13, Figure 2).

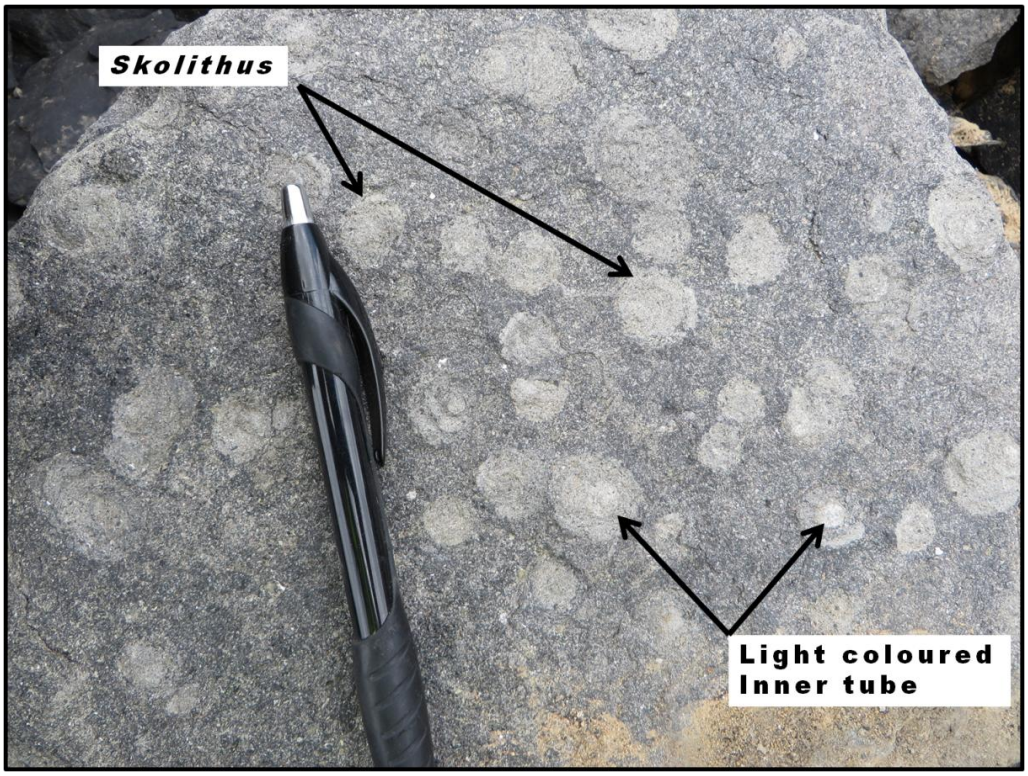

Figure 16: Specimens of *Skolithus* in carbonaceous sandstone in a waste rock stockpile. The light coloured inner tubes are clearly visible in several specimens (waypoint Val03, Figure 2)

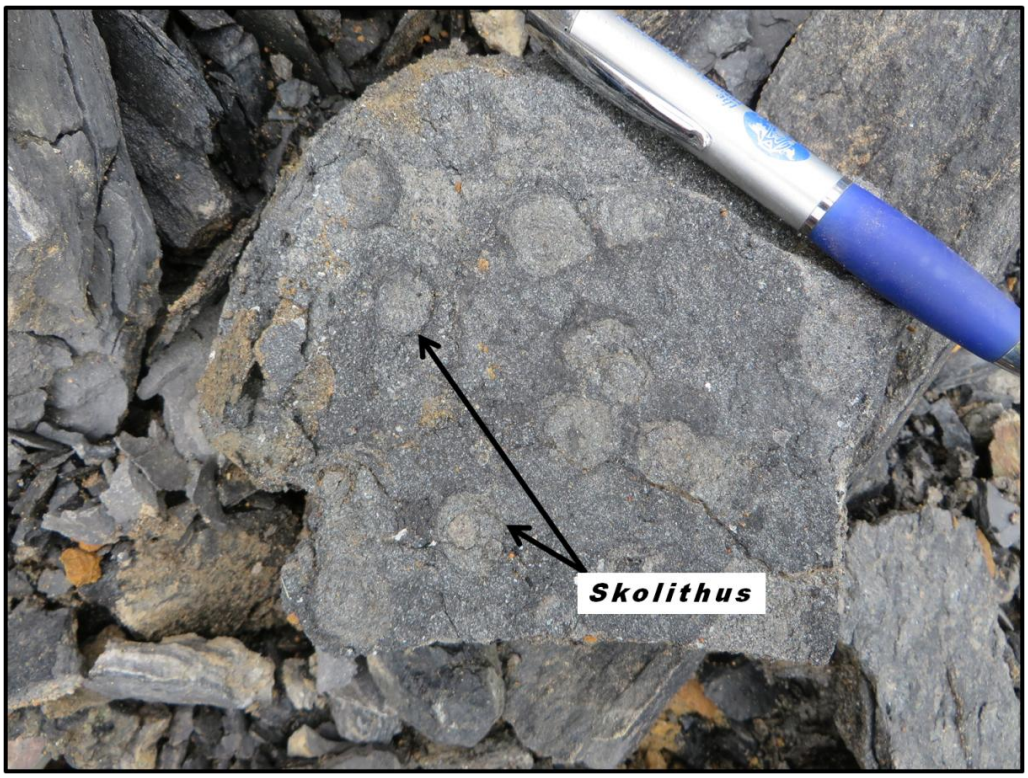

Figure 17: Closely packed specimens of *Skolithus* in carbonaceous sandstones immediately overlying the D Seam (unit E) (waypoint Val11, Figure 2).

stockpiles at waypoints Val03 and Val04, the strata near the boundary of unit B, and unit C in cut 16 (waypoint Val08), the base of unit F in cut 17 (waypoint Val09) and the waste rock stockpiles at waypoint Val12. Hobday and Tavener-Smith (1975) report the presence of this fossil type elsewhere in the Ecca Subgroup where they occur in sandstones associated with upward-coarsening regressive facies cycles attributed to delta progradation.

The fossils identified as the ichnogenus cf. *Scolicia* are much less common than *Skolithus* although they are found in the same lithofacies. The ichnogenus was only identified in two blocks of rock, one each at waypoints Val05 and Val12. The specimens in each location were not well preserved and the fossils not clearly developed, but they appear to be similar to specimens described as *Scolicia* by Hobday and Tavener-Smith (1975); the identification of this ichnogenus requires verification from better preserved specimens. The trace fossils are not palaeontologically significant.

7 SUMMARY

A site investigation of the open pit and associated waste rock stockpiles at the Vaalbult Colliery was conducted by Prof B. Millsteed on the 15th of January 2016. During the conduct of the investigation the highwalls in pit cuts 16 and 17 were inspected, as well as a series of waste rock stockpiles produced in an earlier phase of the collieries operations and (in a separate area) waste rock currently being extracted from cut 24 was inspected. The site investigation identified eight separate lithofacies (including an upper-most unconsolidated regolith horizon) which include two coal seams (the D Seam and the E Seam) which are currently being targeted by the mining operations. The lower-most of the seams (the E seam) forms the floor of the colliery pit.

Two distinct sets of fossil materials were identified within the rocks affected by of the colliery operations. The first set consists of plant macrofossils in the form of large, striated, carbonaceous compressions of logs are attributed to the Sphenophyta. No fossils attributable to leaves, fructifications or inflorescences were located; but this is probably a reflection of the high-energy environment of deposition represented by the sandstones. The fossils located are not palaeontologically significant due to their imprecise identification.

The second group of fossils are tube-like ichnofossils. The most abundant of the ichnogenera in the colliery succession are that vertical burrows attributed to *Skolithus*. The burrows of this type provided permanent shelter to animals that procured their food above the level of the sediment-water interface (Hobday and Tavener-Smith, 1975). A much less abundant trace fossil type is the branching, horizontal, tubular burrows identified herein as cf. *Scolicia*. The identification of these fossils his highly tentative due to their poor state of preservation of the specimens observed. Both ichnogenera are

associated with the sandstones that of Unit B, the sandier basal portion of unit C and the base of unit F.

The plant macrofossils and trace fossil assemblages identified appear to be associated with the sandstones of unit B, the base of unit c and the base of unit F. No fossils were identified in the other lithological units present within the colliery pit or the associated waste rock stockpiles. None of the fossils identified are palaeontologically significant and require special preservation or excavation.

8 RECOMENDATIONS

The lithological succession of the Vaalbult Colliery is fossiliferous and due care needs to be exercised to ensure that the palaeontological heritage of the area is not diminished by the mining activities. That said, the strata being mined by the colliery occur beneath a uniformly thick regolith horizon and do not crop out. The absence of bedrock outcrop means that no fossils are observable at surface. As a result, it is only due to the ongoing mining activities that the fossiliferous strata are exposed and made available for scientific study. None of the fossils located during the study are of sufficient palaeontological significance that their excavation by a palaeontologist or their preservation is required, but this may not always be the case..

The possibility of the presence of palaeontologically significant fossils within the rocks of the colliery remains a possibility. The greatest potential for the presence of significant plant macrofossils is in the lower-energy lithofacies represented by units C and F. It is accordingly recommended that a member of staff (e.g., the Environment Officer) of the Vaalbult Mining Company (Pty) Ltd be trained to recognise the types of fossils that may be exposed via the mining operations. This officer should:

- Make regular inspections of newly exposed rock material following blasting to identify if scientifically significant fossils have been exposed.
- If potententially significant fossils are present, they should be collected and placed in a safe, protected area for storage.
- While the fossils are collected, precise notes of the location they were collected from must be collected, as well as the lithological unit containing the fossils.
- An experience Karoo palaeobotanist must be mandated by the colliery to inspect the fossils, ascertain their significance and to make any necessary recommendations concerning their preservation.
- The six monthly examinations of the colliery pit and waste rock stockpiles by an experience Karoo palaeobotanist should continue subject to later review.

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