A LETTER OF RECOMMENDATION FOR EXEMPTION FOR DORDRECHT SPORTS FIELD UPGRADE

FOR INDWE ENVIRONMENTAL CONSULTING

DATE: 4 FEBRUARY 2020

By Gavin Anderson

Umlando: Archaeological Surveys and Heritage Management

PO Box 10153, Meerensee, 3901

Phone: 035-7531785 Cell: 0836585362

Abbreviations

HP	Historical Period
IIA	Indeterminate Iron Age
LIA	Late Iron Age
EIA	Early Iron Age
ISA	Indeterminate Stone Age
ESA	Early Stone Age
MSA	Middle Stone Age
LSA	Late Stone Age
HIA	Heritage Impact Assessment
PIA	Palaeontological Impact Assessment

INTRODUCTION

Indwecon Environmental Consulting has been appointed by BVI on behalf of Emalahleni Local Municipality to undertake the EIA process for the proposed Dordrecht Sports Field Upgrade project. The sports facility is an existing combined soccer and rugby field with a 200 person grandstand, gravel parking area and is fenced in. The upgrade will remain within the existing footprint however a small section along the northern boundary will be expanded by 1800m² to accommodate the provision of a grassed athletics track. When they first constructed the existing sports facility, they excavated, infilled and levelled the ground to make the fields etc.

The main reason the project triggers an EIA is because the facility is within close proximity to a wetland and the extension will trigger the need to infill a small part of the wetland.

Umlando was requested to make a comment regarding the development. I suggested a Letter of Exemption since this area was partly covered by a survey I undertook in 2019 and includes a PIA (Anderson 2019 – Appendix A). This survey included the land adjacent to the study area. No heritage features were noted in the study area. Isolated stone tools will probably occur as they did for the previous study.

According to the PIA desktop (Appendix A), the town of Dordrecht is in the Molteno Formation (fig. 6). If deep excavations (>2m) are planned within the study area, then they should be inspected by a palaeontologist.

Fig. 1 – 5 shows the location of the study area over different time periods. No known buildings occur in the study area.

The project should be exempt from further HIA studies.

FIG. 1 GENERAL LOCATION OF THE STUDY AREA

FIG. 2: AERIAL OVERVIEW OF THE STUDY AREA

FIG. 3: TOPOGRAPHICAL OVERVIEW OF THE EASTERN STUDY AREA

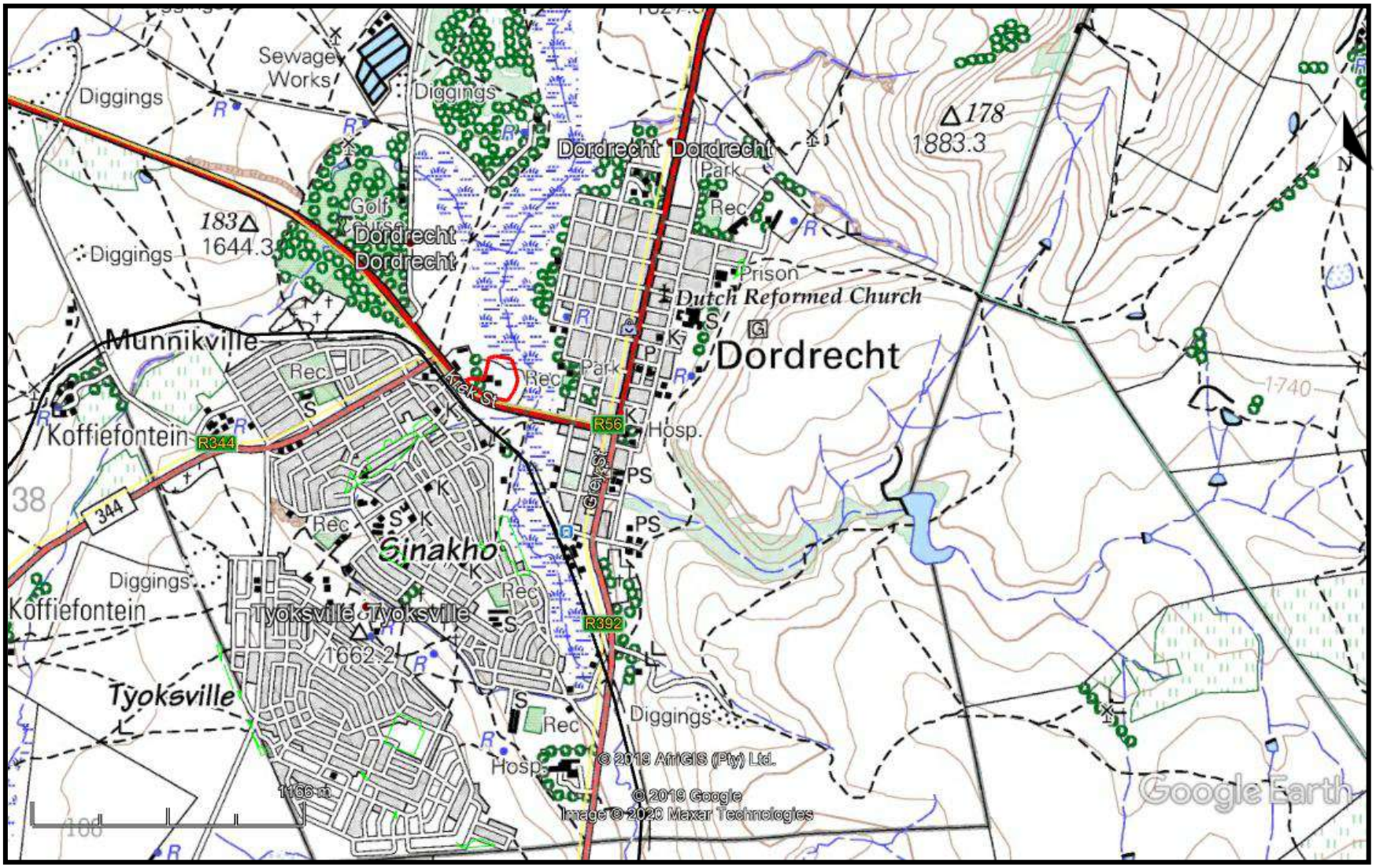

FIG. 4: STUDY AREA IN 1945

FIG. 5: STUDY AREA IN 1966

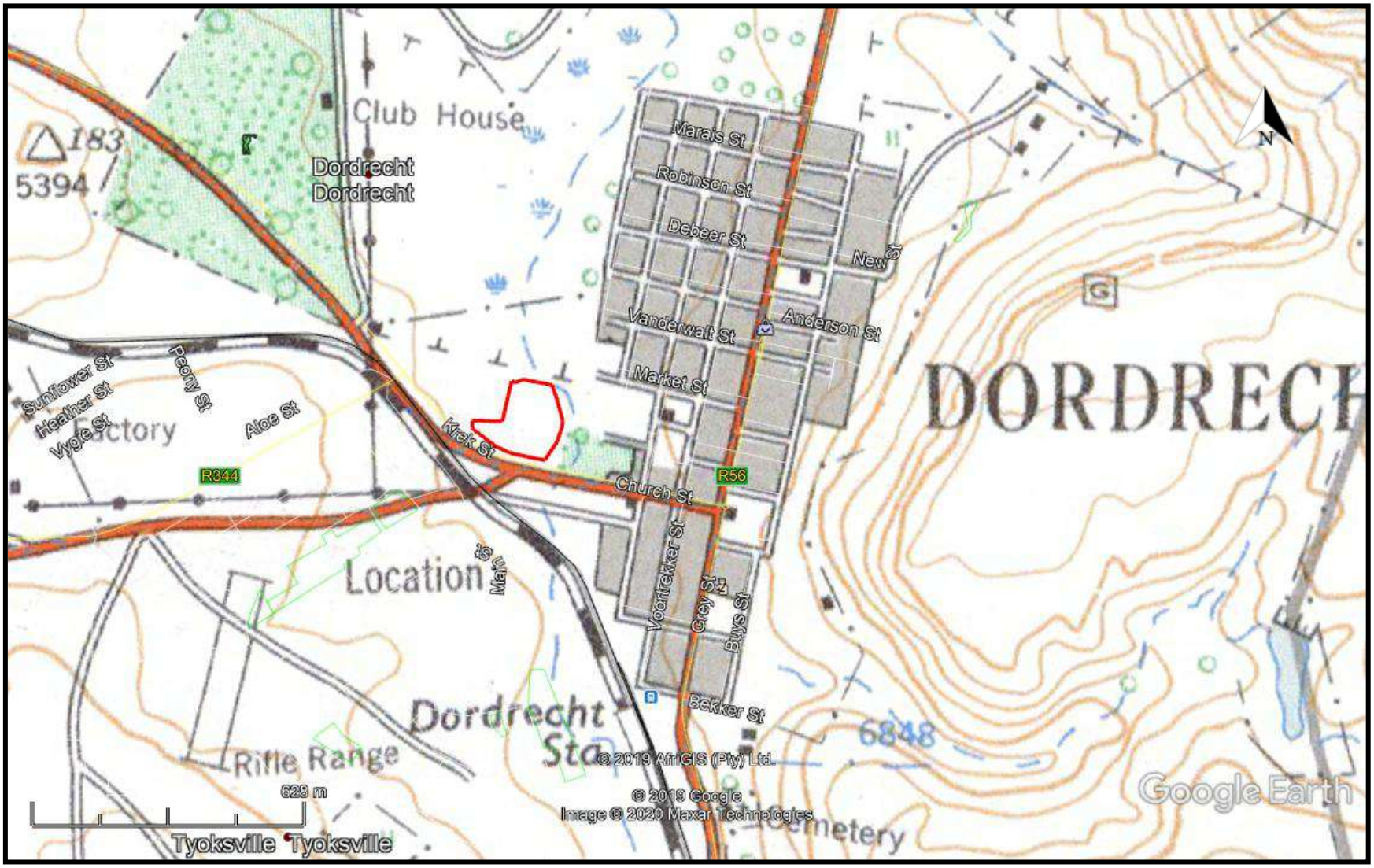

FIG. 6: PALAEONTOLOGICAL SENSITIVITY MAP

COLOUR	SENSITIVITY	REQUIRED ACTION
RED	VERY HIGH	field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	desktop study is required
BLUE	LOW	no palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	no palaeontological studies are required
WHITE/CLEAR	UNKNOWN	these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

REFERENCES

Heritage Survey Of The Dordrecht Water & Sanitation Services Upgrades; Dordrecht, Eastern Cape. For Aurecon (Pty) Ltd

EXPERIENCE OF THE HERITAGE CONSULTANT

Gavin Anderson has a M. Phil (in archaeology and social psychology) degree from the University of Cape Town. Gavin has been working as a professional archaeologist and heritage impact assessor since 1995. He joined the Association of Professional Archaeologists of Southern Africa in 1998 when it was formed. Gavin is rated as a Principle Investigator with expertise status in Rock Art, Stone Age and Iron Age studies. In addition to this, he has worked on both West and East Coast shell middens, Anglo-Boer War sites, and Historical Period sites.

DECLARATION OF INDEPENDENCE

I, Gavin Anderson, declare that I am an independent specialist consultant and have no financial, personal or other interest in the proposed development, nor the developers or any of their subsidiaries, apart from fair remuneration for work performed in the delivery of heritage assessment services. There are no circumstances that compromise the objectivity of my performing such work.

Gavin Anderson
Archaeologist/Heritage Impact Assessor

HERITAGE SURVEY OF THE DORDRECHT WATER & SANITATION SERVICES UPGRADES; DORDRECHT, EASTERN CAPE

FOR AURECON (PTY) LTD

DATE: 25 MAY 2019

By Gavin Anderson

Umlando: Archaeological Surveys and Heritage Management

PO Box 102532, Meerensee, 3901

Phone/fax: 035-7531785 Fax: 0865445631

Cell: 0836585362

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PIA	Palaeontological Impact Assessment

INTRODUCTION

The town of Dordrecht in the Eastern Cape is currently experiencing critical water shortages and there is an urgent need to secure a long-term water supply. An increased level of service delivery to full waterborne sanitation for the entire town is also planned for the near future, which will put further strain on the water supply. To provide for the necessary improvements to the level of water and sanitation delivery, the Water Services Authority (Chris Hani District Municipality) has identified a number of projects that they wish to implement. These include reinstating the existing Hogsett dam, raising the wall of the Munnik dam, upgrading the Water Treatment Works (WTW), upgrading the Waste Water Treatment Works (WTW) and upgrading and/or reconfiguring the bulk sewers. Environmental authorisations will be required, and specialist heritage input will be needed as part of the environmental impact assessment process.

The proposed activities will take place within the town of Dordrecht, Eastern Cape. Dordrecht is about 70km north-northeast of Queenstown and can be accessed via the R392 from Queenstown or from the R56 from Indwe or Molteno. It forms part of the Emalahleni Local Municipality which falls under the Chris Hani District Municipality. There are two main components to the project, one that relates to the upgrade of the water supply services and the other that relates to the upgrade of the sanitation service (fig.'s 1 – 4). This will include:

- the re-instatement of the Hogsett Dam
- the raising of the Munnik Dam
- Upgrading of the Water Treatment Works
- Upgrading and/or reconfiguration of the bulk sewers

Aurecon has been appointed by the Chris Hani District Municipality to undertake the necessary engineering and environmental studies. Umlando has been subcontracted to undertake the HIA desktop study and possible Phase 1 survey.

FIG. 1 GENERAL LOCATION OF THE STUDY AREA

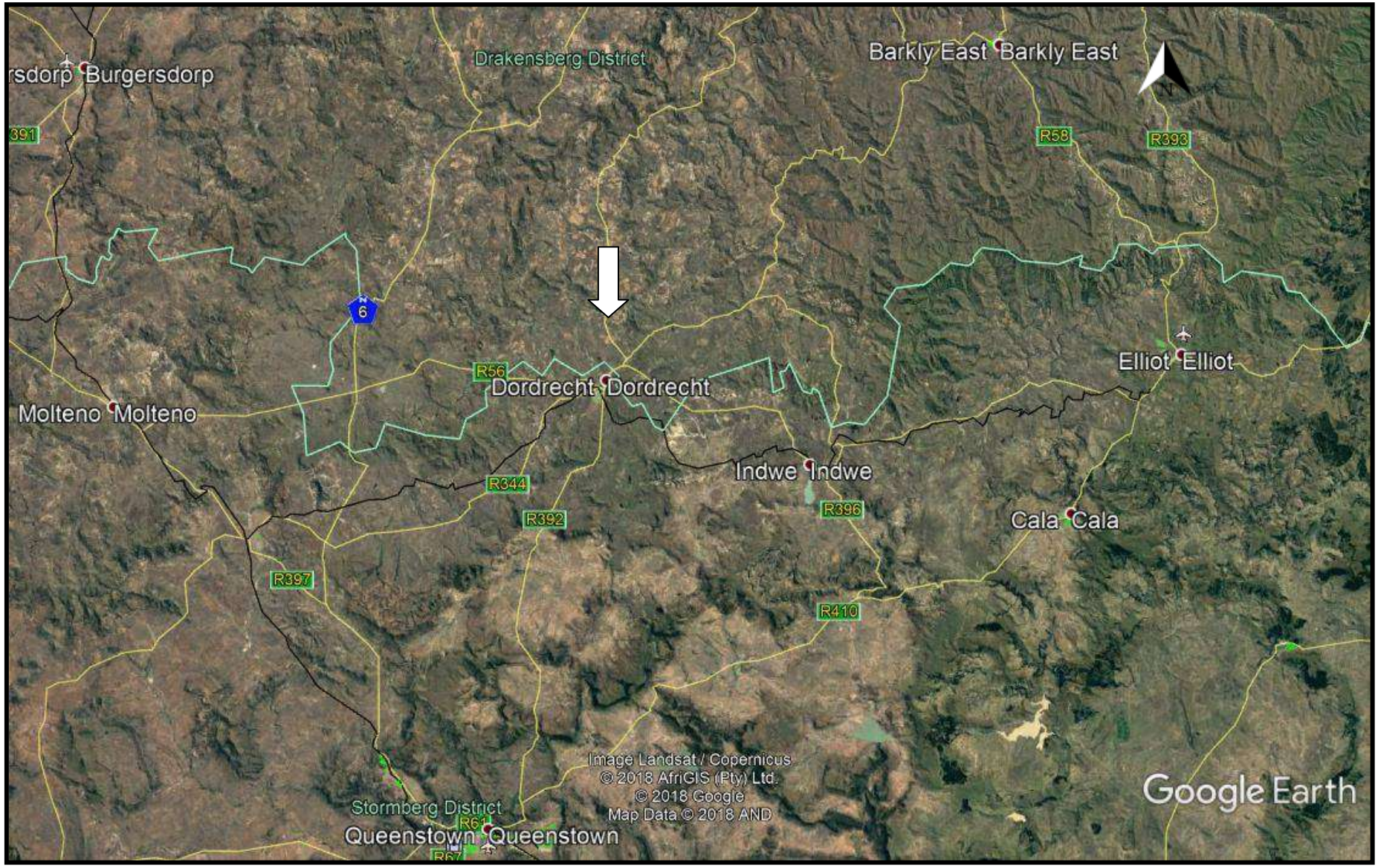


FIG. 2: AERIAL OVERVIEW OF THE STUDY AREA

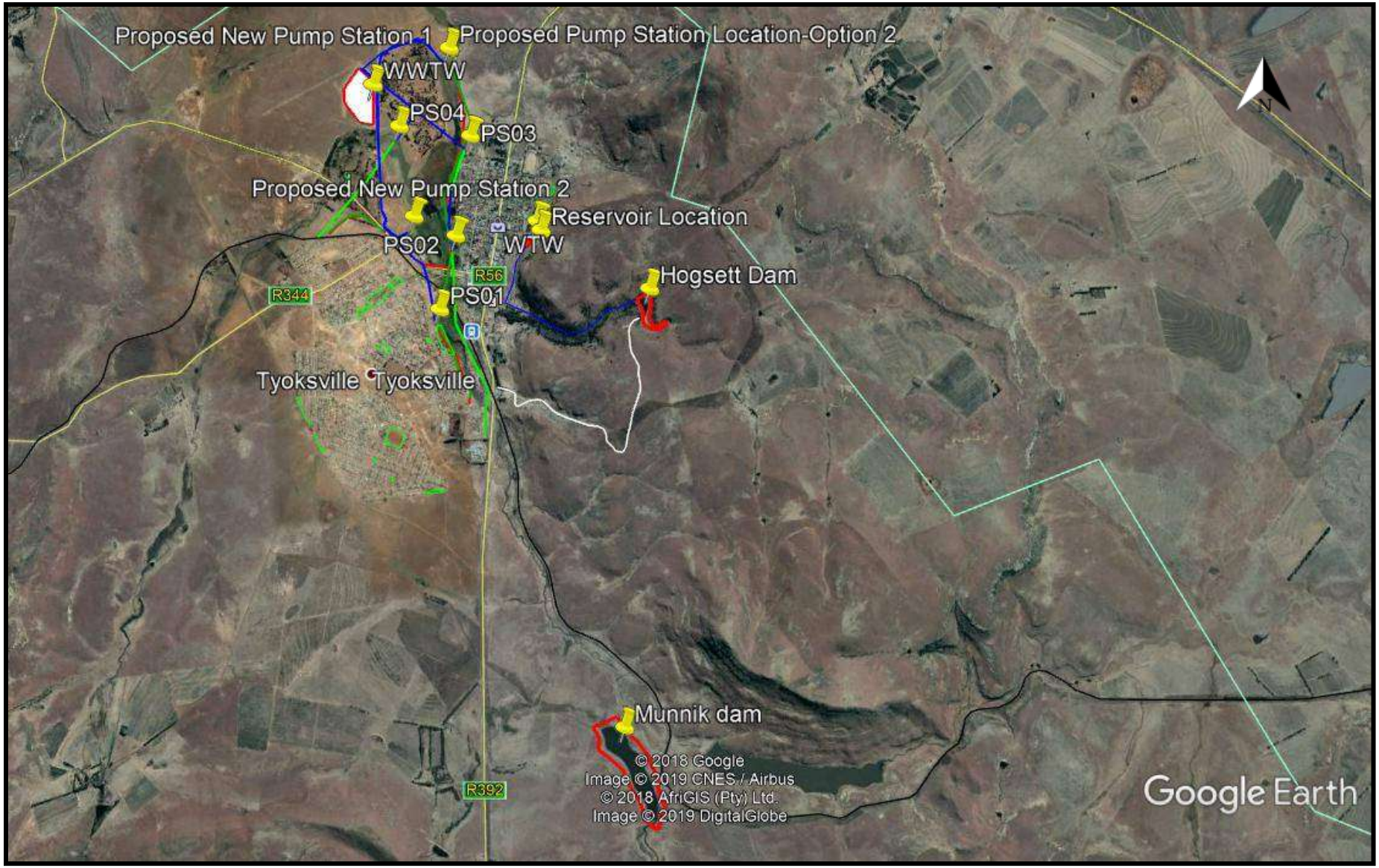


FIG. 3A: TOPOGRAPHICAL MAP OF THE STUDY AREA

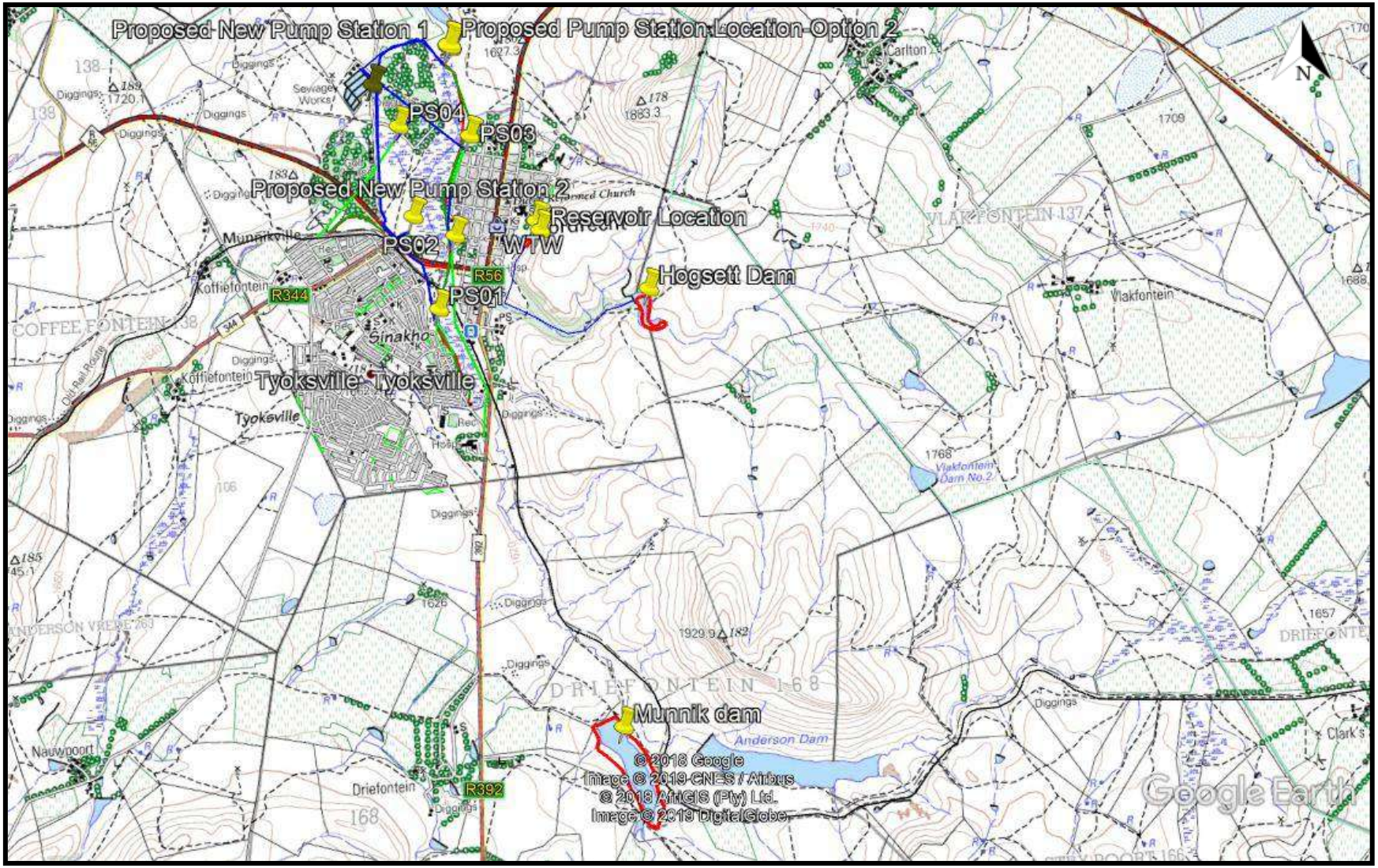


FIG. 3B: TOPOGRAPHICAL MAP OF THE STUDY AREA IN TOWN

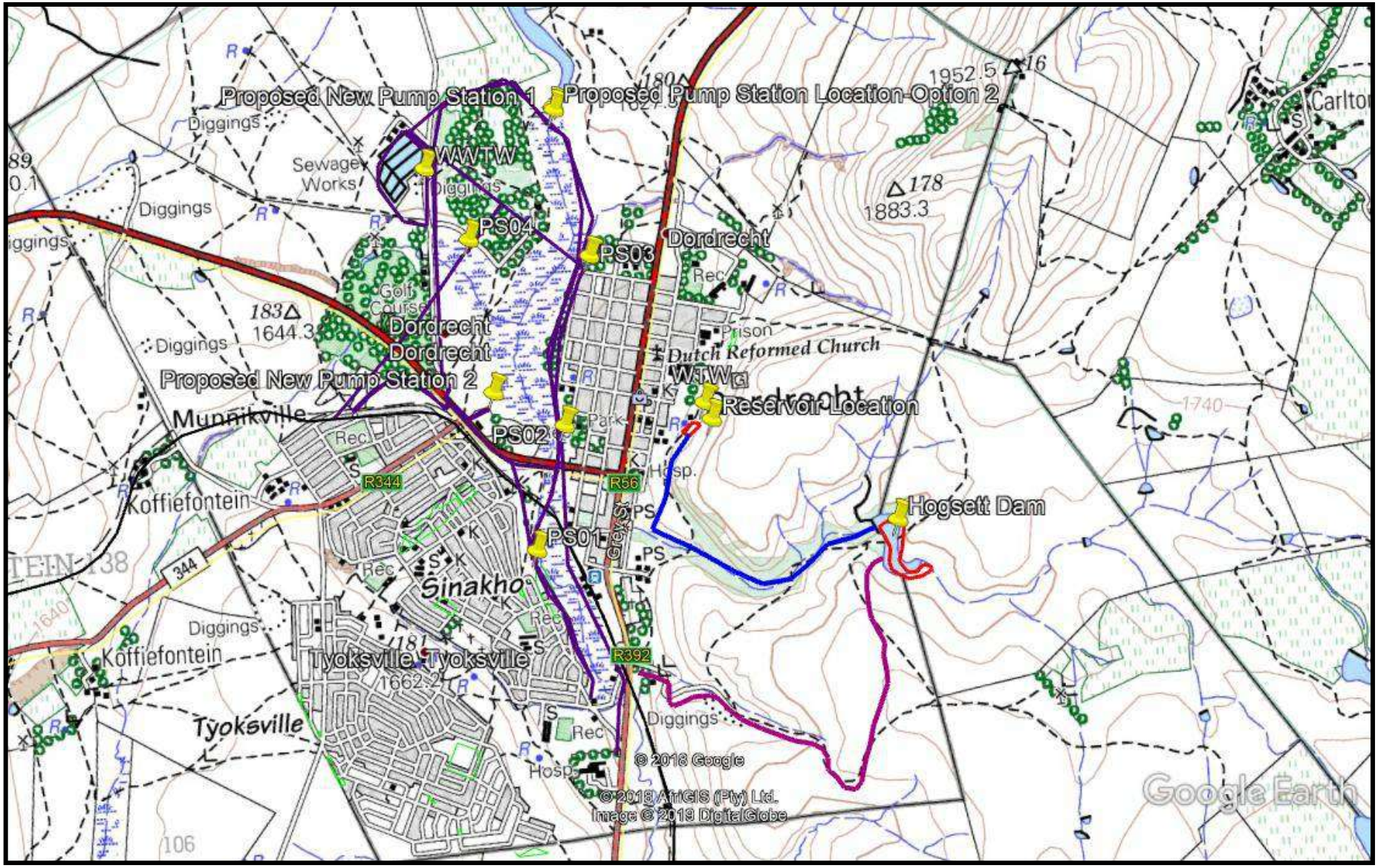


FIG. 4: SCENIC VIEWS OF THE STUDY AREA

NATIONAL HERITAGE RESOURCES ACT OF 1999

The National Heritage Resources Act of 1999 (pp 12-14) protects a variety of heritage resources. This are resources are defined as follows:

1. **"**For the purposes of this Act, those heritage resources of South Africa which are of cultural significance or other special value for the present community and for future generations must be considered part of the national estate and fall within the sphere of operations of heritage resources authorities.
2. Without limiting the generality of subsection (1), the national estate may include—
    2.1. Places, buildings, structures and equipment of cultural significance;
    2.2. Places to which oral traditions are attached or which are associated with living heritage;
    2.3. Historical settlements and townscapes;
    2.4. Landscapes and natural features of cultural significance;
    2.5. Geological sites of scientific or cultural importance;
    2.6. Archaeological and palaeontological sites;
    2.7. Graves and burial grounds, including—
        2.7.1. Ancestral graves;
        2.7.2. Royal graves and graves of traditional leaders;
        2.7.3. Graves of victims of conflict;
        2.7.4. Graves of individuals designated by the Minister by notice in the Gazette;
        2.7.5. Historical graves and cemeteries; and
        2.7.6. Other human remains which are not covered in terms of the Human Tissue Act, 1983 (Act No. 65 of 1983);
3. Sites of significance relating to the history of slavery in South Africa;
    3.1. Movable objects, including—

4. Objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens;
   4.1. Objects to which oral traditions are attached or which are associated with living heritage;
   4.2. Ethnographic art and objects;
   4.3. Military objects;
   4.4. objects of decorative or fine art;
   4.5. Objects of scientific or technological interest; and
   4.6. books, records, documents, photographic positives and negatives, graphic, film or video material or sound recordings, excluding those that are public records as defined in section 1(xiv) of the National Archives of South Africa Act, 1996 (Act No. 43 of 1996).
5. Without limiting the generality of subsections (1) and (2), a place or object is to be considered part of the national estate if it has cultural significance or other special value because of—
   5.1. Its importance in the community, or pattern of South Africa's history;
   5.2. Its possession of uncommon, rare or endangered aspects of South Africa's natural or cultural heritage;
   5.3. Its potential to yield information that will contribute to an understanding of South Africa's natural or cultural heritage;
   5.4. Its importance in demonstrating the principal characteristics of a particular class of South Africa's natural or cultural places or objects;
   5.5. Its importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
   5.6. Its importance in demonstrating a high degree of creative or technical achievement at a particular period;
   5.7. Its strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
   5.8. Its strong or special association with the life or work of a person, group or organisation of importance in the history of South Africa; and

5.9. sites of significance relating to the history of slavery in South Africa"

METHOD

The method for Heritage assessment consists of several steps.

The first step forms part of the desktop assessment. Here we would consult the database that has been collated by Umlando. These database contain archaeological site locations and basic information from several provinces (information from Umlando surveys and some colleagues), most of the national and provincial monuments and battlefields in Southern Africa (http://www.vuvuzela.com/googleearth/monuments.html) and cemeteries in southern Africa (information supplied by the Genealogical Society of Southern Africa). We use 1st and 2nd edition 1:50 000 topographical and 1937 aerial photographs where available, to assist in general location and dating of buildings and/or graves. The database is in Google Earth format and thus used as a quick reference when undertaking desktop studies. Where required we would consult with a local data recording centre, however these tend to be fragmented between different institutions and areas and thus difficult to access at times. We also consult with an historical architect, palaeontologist, and an historian where necessary.

The survey results will define the significance of each recorded site, as well as a management plan.

All sites are grouped according to low, medium, and high significance for the purpose of this report. Sites of low significance have no diagnostic artefacts or features. Sites of medium significance have diagnostic artefacts or features and these sites tend to be sampled. Sampling includes the collection of artefacts for future analysis. All diagnostic pottery, such as rims, lips, and decorated sherds are sampled, while bone, stone, and shell are mostly noted. Sampling usually

occurs on most sites. Sites of high significance are excavated and/or extensively sampled. Those sites that are extensively sampled have high research potential, yet poor preservation of features.

Defining significance

Heritage sites vary according to significance and several different criteria relate to each type of site. However, there are several criteria that allow for a general significance rating of archaeological sites.

These criteria are:

1. State of preservation of:

1.1. Organic remains:

1.1.1. Faunal

1.1.2. Botanical

1.2. Rock art

1.3. Walling

1.4. Presence of a cultural deposit

1.5. Features:

1.5.1. Ash Features

1.5.2. Graves

1.5.3. Middens

1.5.4. Cattle byres

1.5.5. Bedding and ash complexes

2. Spatial arrangements:

2.1. Internal housing arrangements

2.2. Intra-site settlement patterns

2.3. Inter-site settlement patterns

3. Features of the site:

3.1. Are there any unusual, unique or rare artefacts or images at the site?

3.2. Is it a type site?

3.3. Does the site have a very good example of a specific time period, feature, or artefact?

4. Research:

4.1. Providing information on current research projects

4.2. Salvaging information for potential future research projects

5. Inter- and intra-site variability

5.1. Can this particular site yield information regarding intra-site variability, i.e. spatial relationships between various features and artefacts?

5.2. Can this particular site yield information about a community's social relationships within itself, or between other communities?

6. Archaeological Experience:

6.1. The personal experience and expertise of the CRM practitioner should not be ignored. Experience can indicate sites that have potentially significant aspects, but need to be tested prior to any conclusions.

7. Educational:

7.1. Does the site have the potential to be used as an educational instrument?

7.2. Does the site have the potential to become a tourist attraction?

7.3. The educational value of a site can only be fully determined after initial test-pit excavations and/or full excavations.

8. Other Heritage Significance:

8.1. Palaeontological sites

8.2. Historical buildings

8.3. Battlefields and general Anglo-Zulu and Anglo-Boer sites

8.4. Graves and/or community cemeteries

8.5. Living Heritage Sites

8.6. Cultural Landscapes, that includes old trees, hills, mountains, rivers, etc related to cultural or historical experiences.

The more a site can fulfill the above criteria, the more significant it becomes. Test-pit excavations are used to test the full potential of an archaeological deposit. This occurs in Phase 2. These test-pit excavations may require further excavations if the site is of significance (Phase 3). Sites may also be mapped and/or have artefacts sampled as a form of mitigation. Sampling normally occurs when the artefacts may be good examples of their type, but are not in a primary archaeological context. Mapping records the spatial relationship between features and artefacts.

The above significance ratings allow one to grade the site according to SAHRA's grading scale. This is summarised in Table 1.

TABLE 1: SAHRA GRADINGS FOR HERITAGE SITES

SITE SIGNIFICANCE	FIELD RATING	GRADE	RECOMMENDED MITIGATION
High Significance	National Significance	Grade 1	Site conservation / Site development
High Significance	Provincial Significance	Grade 2	Site conservation / Site development
High Significance	Local Significance	Grade 3A / 3B	
High / Medium Significance	Generally Protected A		Site conservation or mitigation prior to development / destruction
Medium Significance	Generally Protected B		Site conservation or mitigation / test excavation / systematic sampling / monitoring prior to or during development / destruction
Low Significance	Generally Protected C		On-site sampling monitoring or no archaeological mitigation required prior to or during development / destruction

DESKTOP STUDY

The desktop study consisted of analysing various maps for evidence of prior habitation in the study area, as well as for previous archaeological surveys. I also used various sources for historical information.

PREVIOUS ACHAEOLOGICAL & HERITAGE SURVEYS

A heritage screening exercise was undertaken by Cedar Towers (2016) for a related project in Dordrecht. They noted that there have been few heritage surveys in the general area. They do note that there is a Provincial Heritage Site in the town: the Dutch Reformed Church at 90 Grey Street.

There are 2nd Anglo-Boer War, World War 1 and 2 memorials in town. The town's cemetery is located on the southern side. This is probably a historical cemetery as well. The Google image suggests there are family cemeteries that would date to a few years after the formation of the town (1856). This needs to be confirmed. There is a Christian, Jewish and more recently, a Muslim cemetery at the southern end of town.

The nearest Phase 1 heritage impact assessment was undertaken by Anderson (2007) at Indwe (fig. 5). Other scoping exercises have occurred, but they remain at a desktop level. The general area is known for open Middle and Late Stone Age scatters. However, the more important sites tend to be in shelters and overhangs that might contain rock art images. These would be found in the areas with sandstone outcrops.

The 1945 serial imagery shows there was an existing dam on the edge of town. There is also an area on the west of the dam that consists of an outline of trees in a polygon shape. Within the polygon are two circular tree features. There are two to three houses on the eastern edge of the trees. This could be an old outspan. The Hogsett dam is visible while the Munnik Dam does not occur.

The 1945 map indicates that the railway south of the Munnik dam had already been dismantled. ThIs implies that any structures relate to the railway predate 1945.

The 1966 topographical map indicates that the Hogsett Dam was already built (in 1932), while the Munnik Dam had not yet been built (fig. 7). The 1966 map indicates that there is a Magazine outside of the town. The buildings amongst the trees still occur.

The town cemetery occurs on both the 1945 and 1966 maps.

FIG. 5: KNOWN HERITAGE SITES IN THE AREA

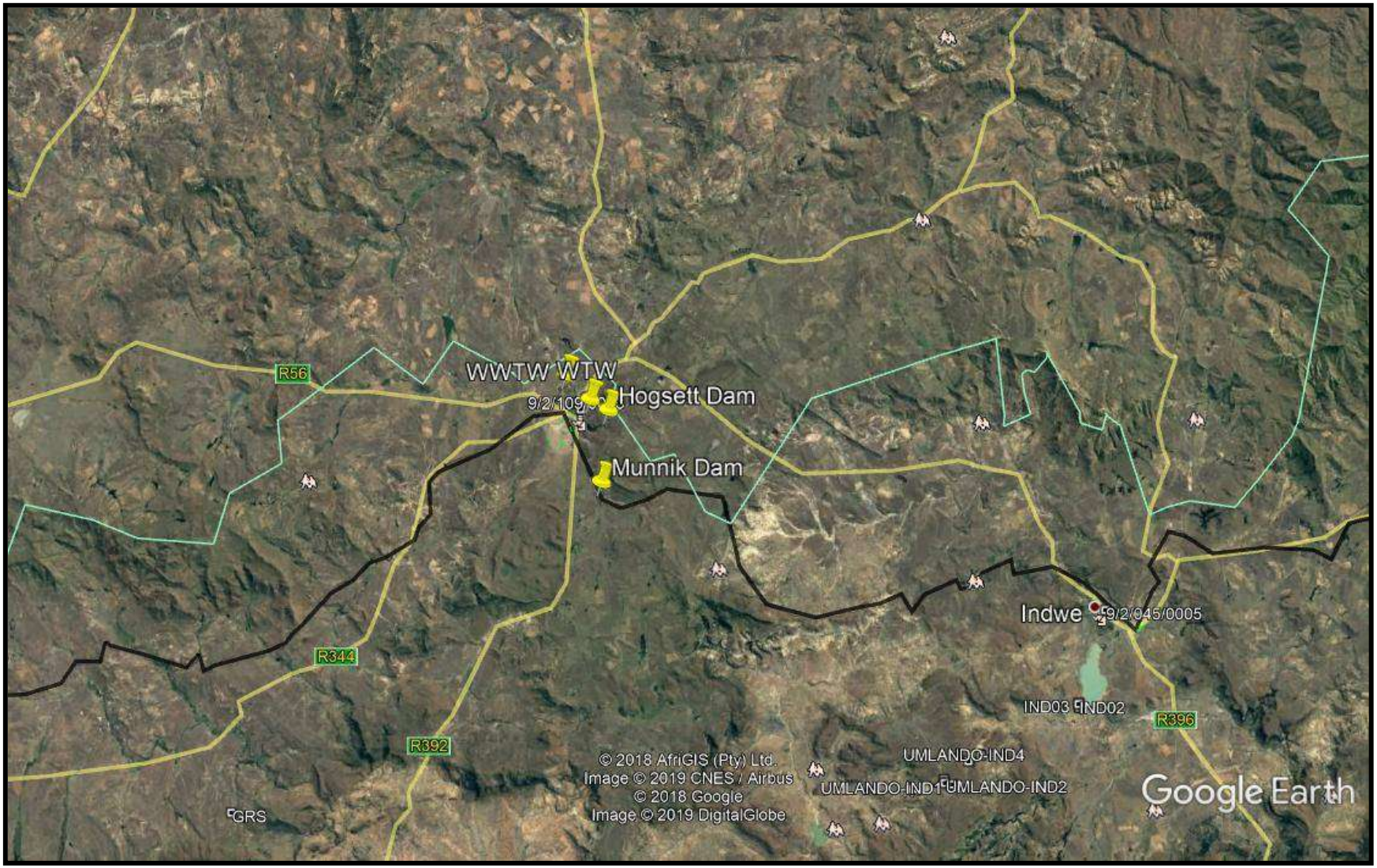


FIG.6a: STUDY AREA IN 1945

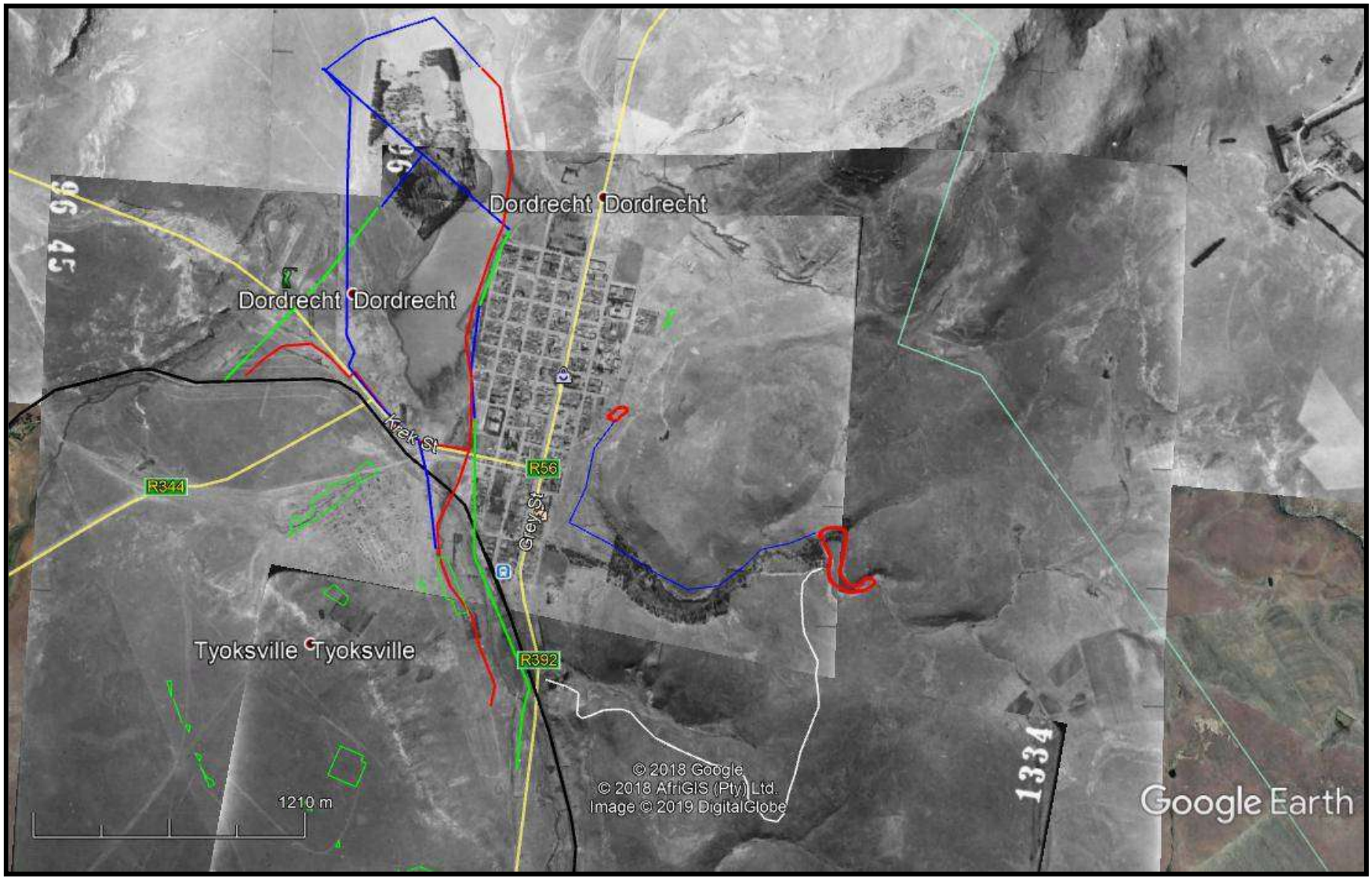


FIG.6b: STUDY AREA IN 1945

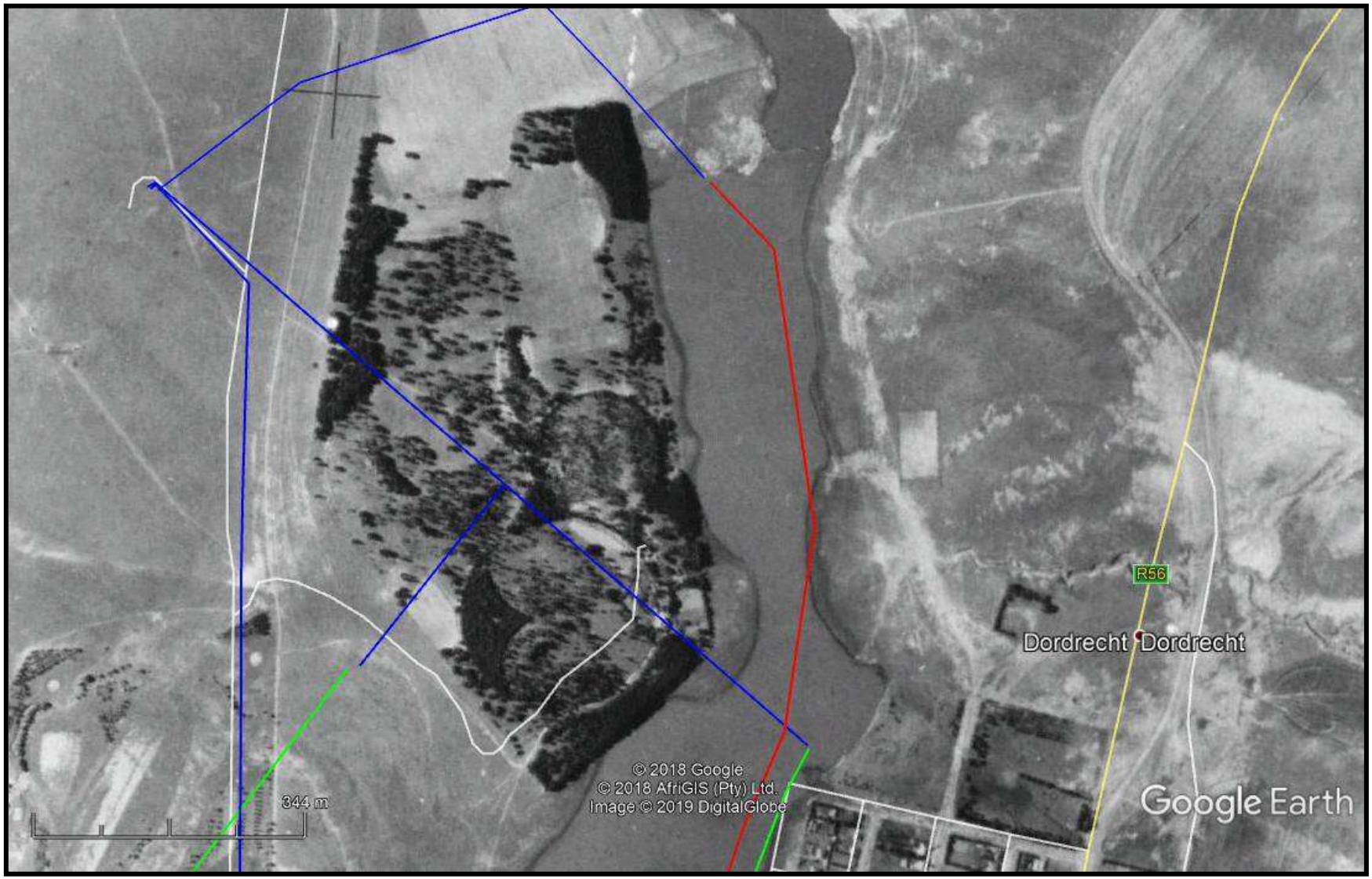


FIG.6c: STUDY AREA IN 1945

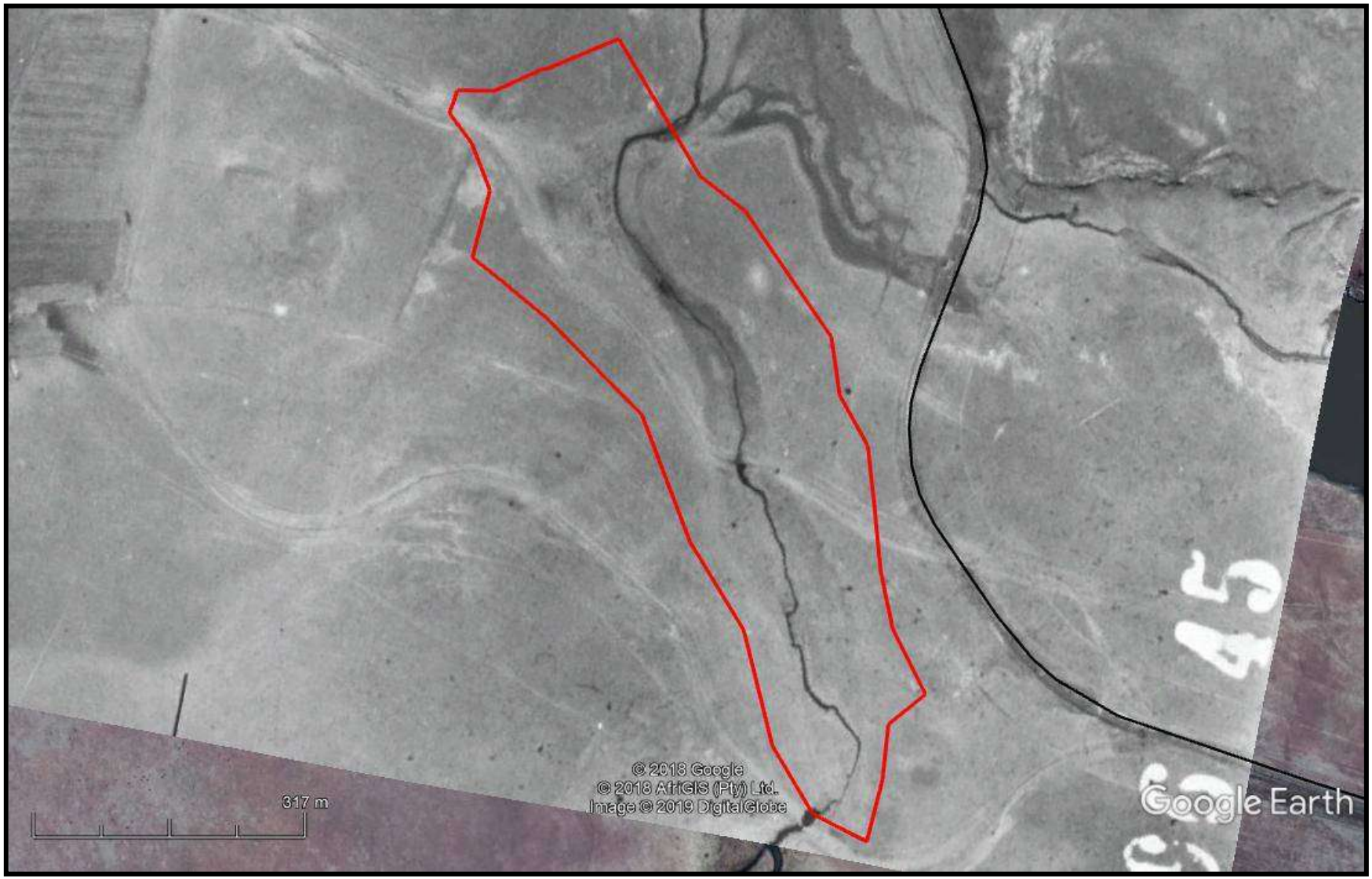
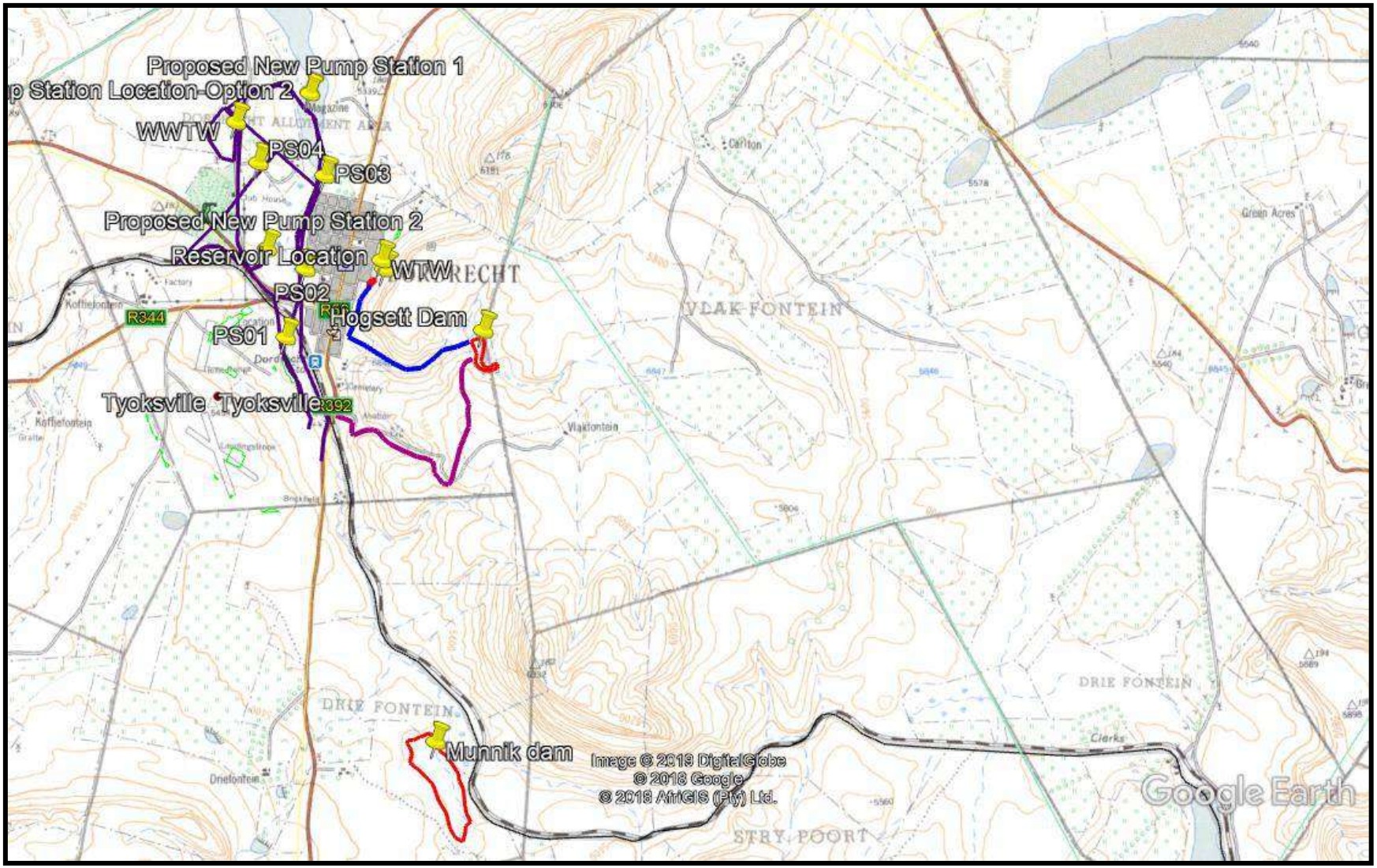


FIG. 7: STUDY AREA IN 1966



The Re-Instatement Of The Hogsett Dam

The Hogsett Dam was originally built in 1932. The cobbled spillway was added either at the time of building or at a later stage. This needs to be verified. The spillway and dam wall need to be removed in order to update the entire dam. The dam burst in 2011 as the original spillway was apparently too narrow to cope with the amount of water, which contributed to the dam collapsing. The proposal is to follow the line of the spillway, but it will be made deeper and wider, so the original one would need to be replaced. The dam wall will also be replaced in its entirety. Fig. 8a-b shows some of the built features. These features appear to be in various stages of disrepair.

All built structures older than 60 years in age are automatically protected by the heritage legislation. A permit will be required for the destruction of any of these features. ECHPRA may require an assessment by a professional architect historiant. It is highly unlikely that permission will not be granted for the built structures to be destroyed. The proposal should include setting the material aside as part of a materials bank. ECHPRA will need to decide where the material is to be stored.

A pipeline will occur from the Hogsett Dam, along the ravine and then veer north towards the existing WTW on the east of town. A new reservoir will be constructed above the WTW. A pipe will run from the reservoir to the WTW. This is shown in fig. 9.

The pipeline will occur just below a sandstone ridge, while the new reservoir will occur above this ridge. As stated previously these ridges are sensitive in terms of rock art and/or hunter-gatherer shelters. This route will need to be surveyed and the sandstone ridge assessed as the NHRA requires buffers from rock art sites.

FIG. 8a: BUILT STRUCTURES AT THE HOGSETT DAM

FIG. 8b: BUILT STRUCTURES AT THE HOGSETT DAM

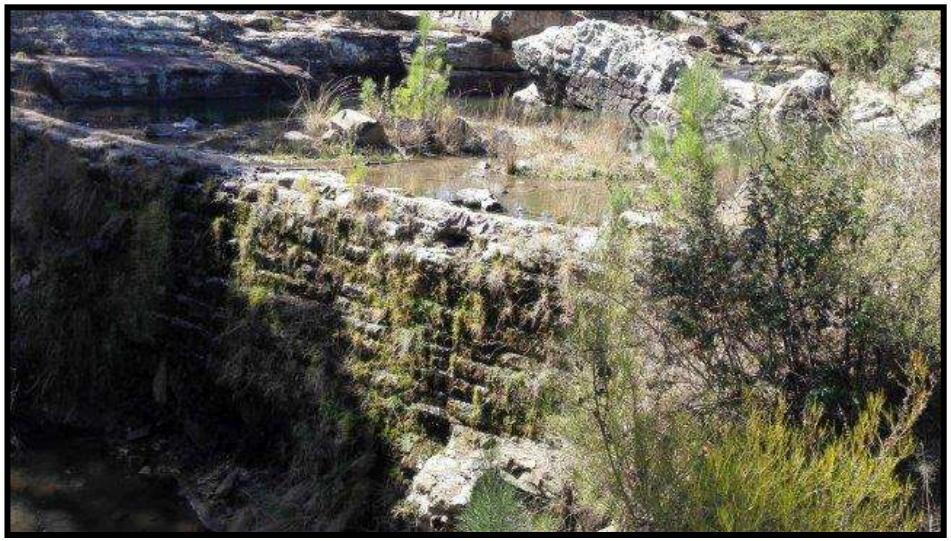
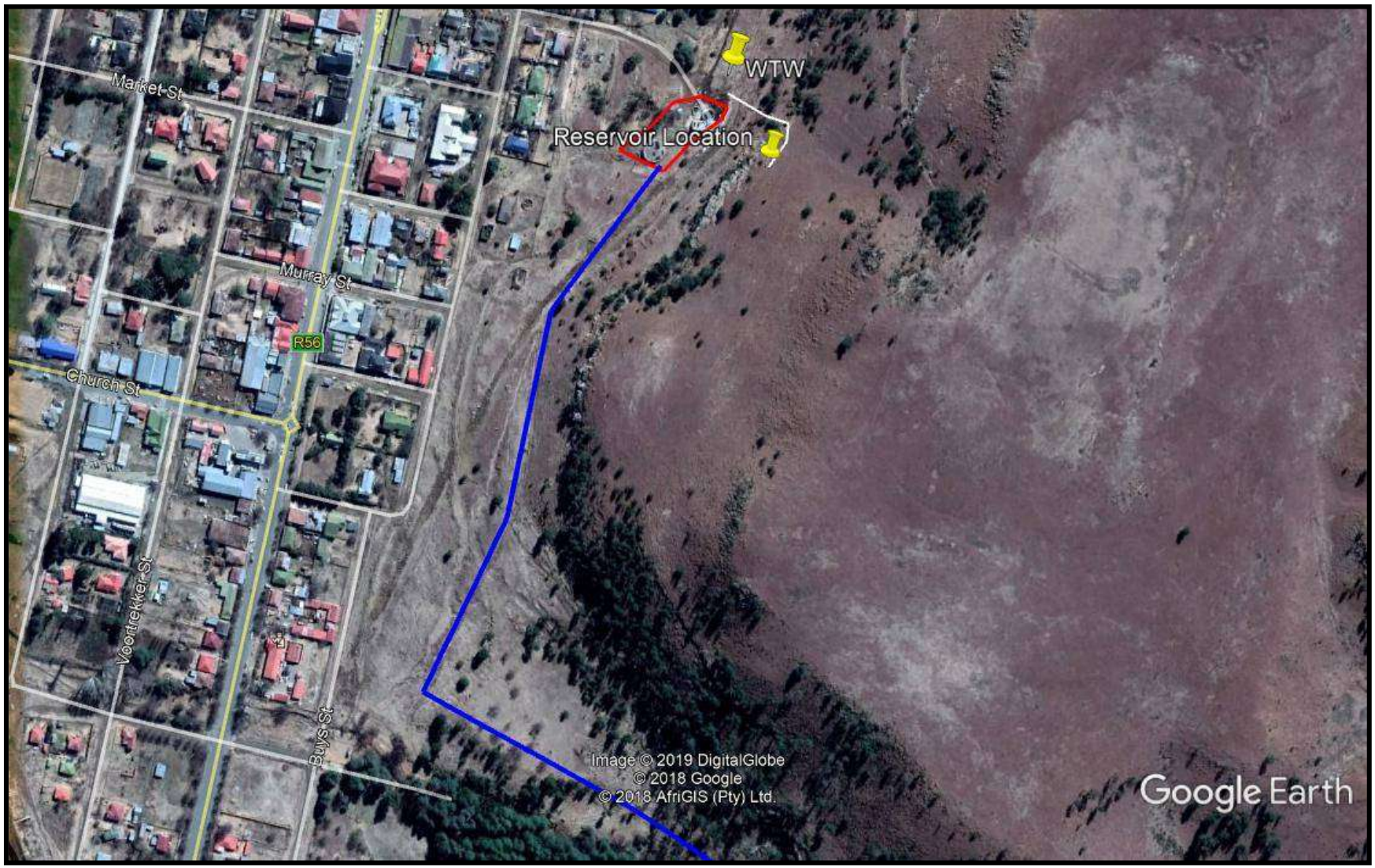



FIG. 9: RESERVOIR LOCATION AND PIPELINE FROM HOGSETT DAM



The Raising Of The Munnik Dam

The Munnik Dam post-dates 1966 and is not protected by heritage legislation (fig. 10). The dam wall will be raised resulting in an approximate 50m extension to the dam in places. There are no known buildings in the new affected area; however, a survey would be required for potential archaeological material. If the dam wall will result in new excavations, then a palaeontological survey might be required. This is discussed below.

Upgrading Of The Waste Water Treatment Works And Sewers

There are three options for the pipelines, each with pump stations (fig. 11). Option 1 (purple on map) uses an existing system and no further heritage work will be required provided that it does not break new ground. Option 2 (yellow on map) and 3 (red on map) are partly aligned with Option 1, and also occur as new lines. Options 2 and 3 will need to have a heritage survey.

Palaeontological Sensitivity

A PIA desktop was undertaken by Dr Alan Smith as the area is of very high palaeontological sensitivity (fig. 12). The PIA report occurs in Appendix A. The report states:

“The WWTW, Hogsett and Munnick Dams are located on Karoo dolerite area, which is an intrusive igneous rock of Middle Jurassic age and not fossiliferous.

The Molteno formation is generally coarse-grained sandstones and less likely to contain fossils. However the finer-grained rocks are fossiliferous (Bordy et al., 2005) and contains plant and insect fossils (Anderson, 1974).

The Molteno Formation contains fossils of 204 plant species and 333 insect species. It is one of the richest Upper Triassic-age plant and insect assemblages. The insect fauna contains well-preserved fossil insects which are very rare (Anderson and Anderson, 1997). The dominant fossil flora is associated with seven recognized habitat types, , two of these include *Dicroidium*, an extinct arboreal genus of seed fern that grew in either riparian forests or temperate woodlands. Nineteen species of *Dicroidium* alone have been recovered from the Molteno Formation (Anderson & Anderson, 1997).

A previous PIA study, ~30km southwest of Dordrecht (Millsteed, 2013) indicates a high possibility of encountering significant fossil material. All new excavations for Options 2 and 3, deeper than 2m will require a palaeontological field inspection…

According to the geology, the work to be done to the east of Dordrecht will be in Dolerite which is not fossiliferous. The town of Dordrecht itself is in the Molteno Formation and if deep excavations (>2m) are planned within the town then they should be inspected by a palaeontologist, if they are fine grained, siltstone or mudstone."

FIG. 10: MUNNIK DAM

FIG. 11: BULK WATER PIPELINE OPTIONS

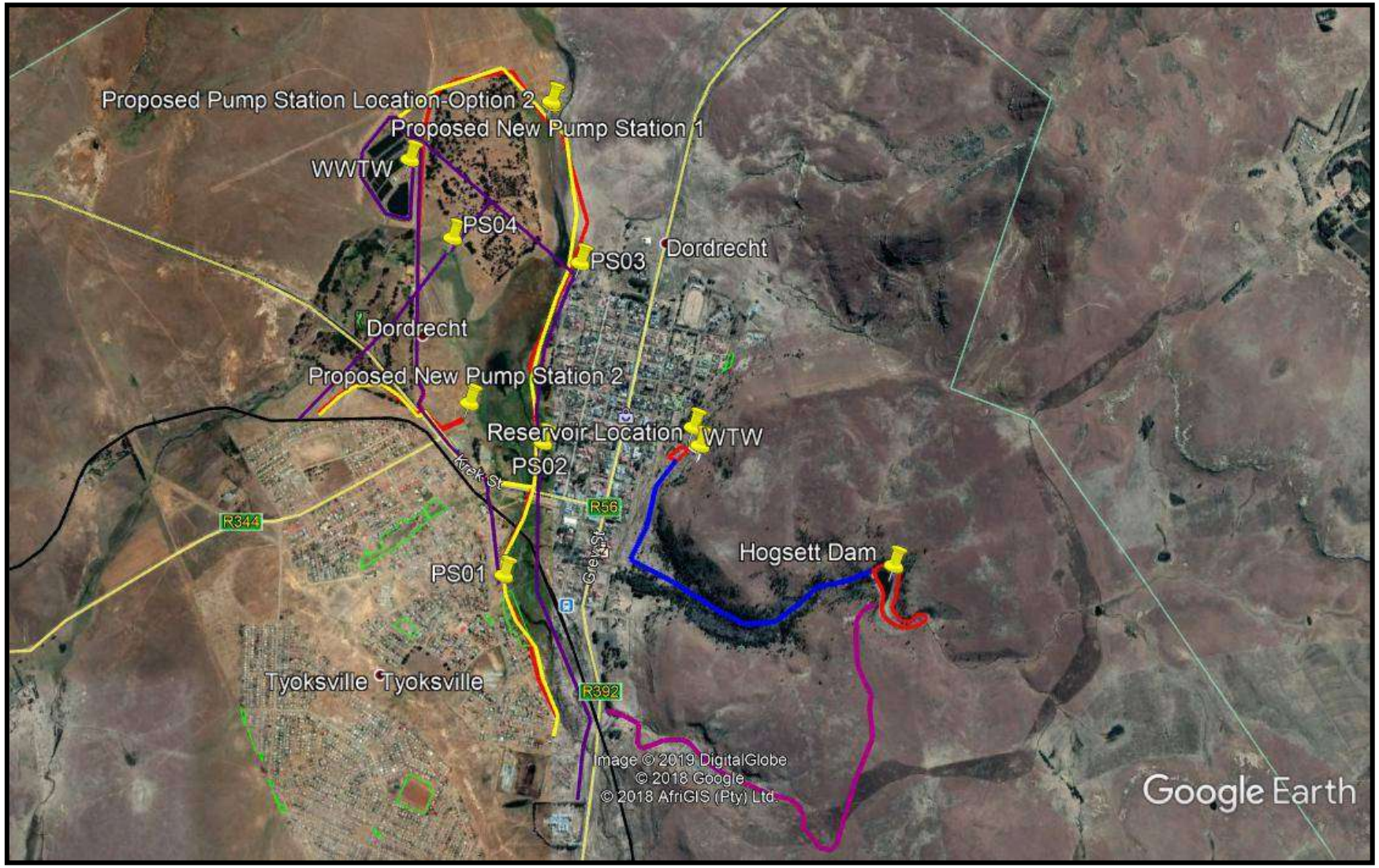
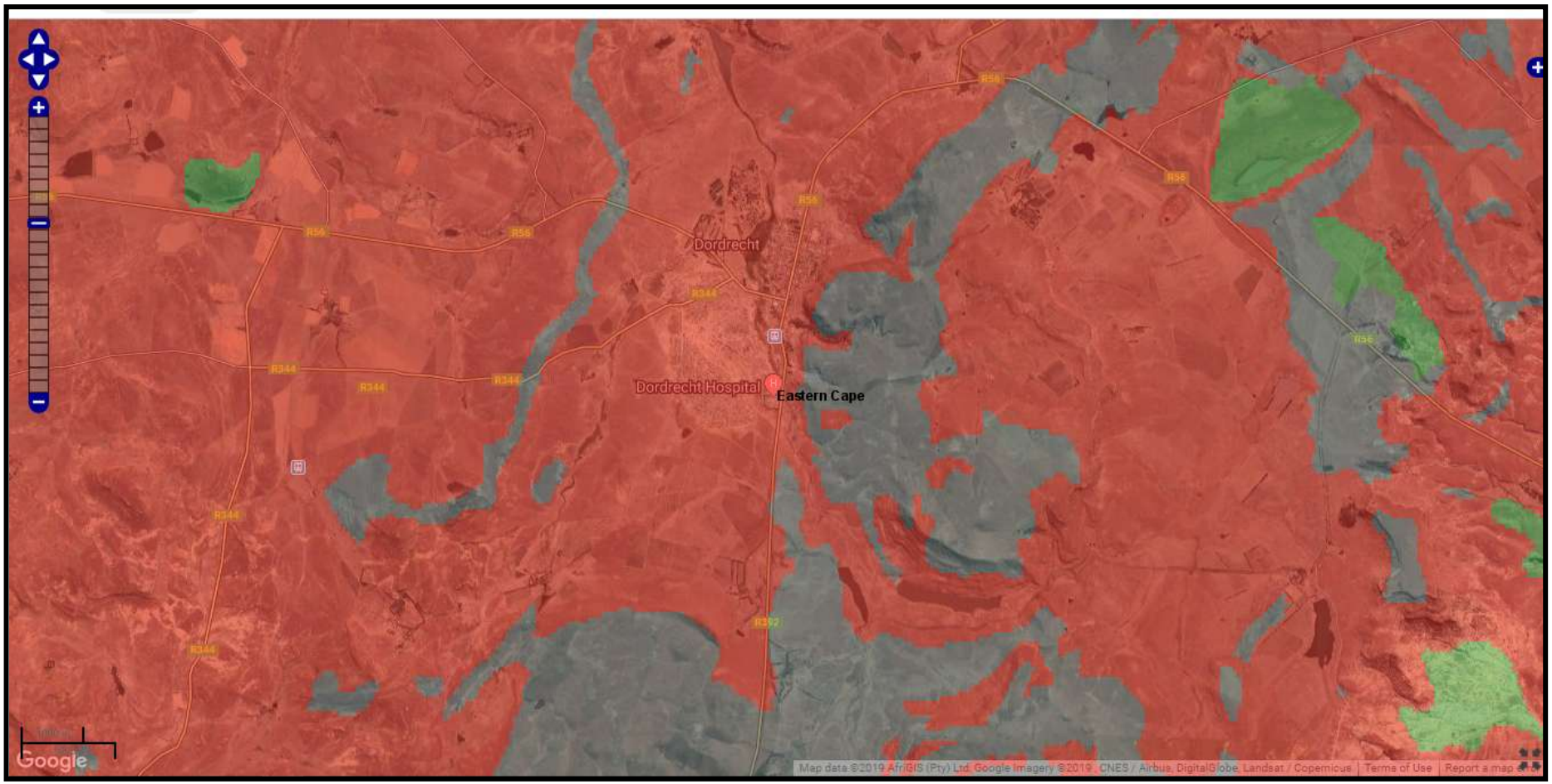


FIG. 12: PALAEONTOLOGICAL SENSITIVITY OF THE AREA



FIELD SURVEY

The field survey was undertaken in May 2019. The survey was undertaken with Mr Leigh Bahlmann, from Aurecon Pty (Ltd). This was to discuss the various technical aspects of the project, e.g. the Hogsett Dam, which pipeline routes will be used etc..

The Re-Instatement Of The Hogsett Dam

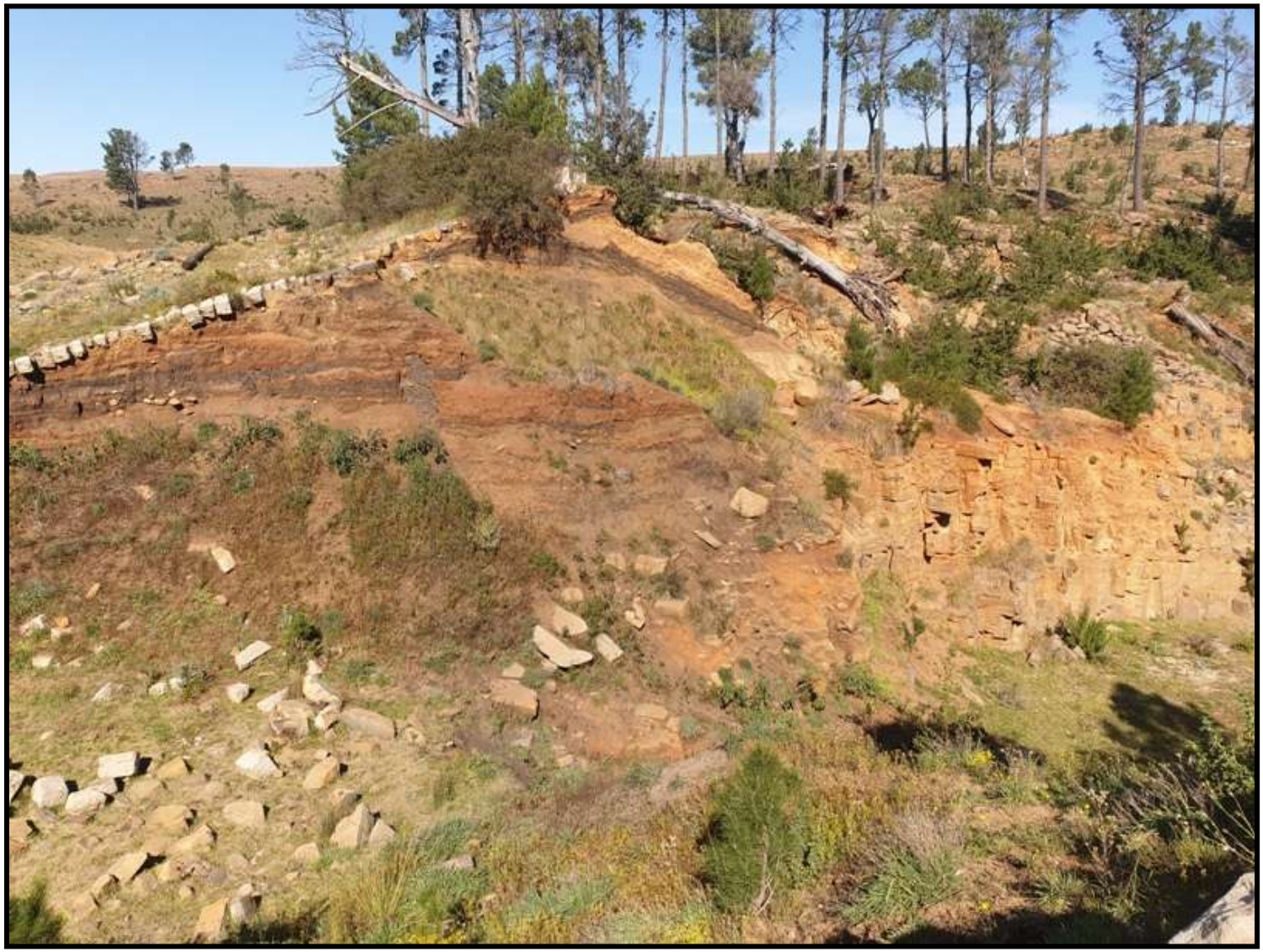
As noted above, the Hogsett Dam wall collapsed (fig. 13) in 2011 and the spillway was extensively damaged at the same time. The original dam wall is unstable as is the spillway and is a safety hazard. The proposal is to rebuild the dam wall and spill way. The spill way will be widened and made higher. The proposal is to use some of the original material at the face of the spillway. This will include the pillars with the Hogsett Reservoir' cornerstones. However, the rest of the spillway will require new materials. The client is prepared to store the materials in an agreed upon location for other buildings in Dordrecht and surrounds. Samples of the various grouting will be retained as well. Most of the grouting was removed during the flood.

An application to have the Hogsett Dam demolished and replaced has been undertaken.

Significance: The Hogsett Dam is of low historical significance. The architectural significance could be requested.

Mitigation: No mitigation is required but the original materials could be stored for other similar buildings in the general area. It is possible to apply the original cut rock to the surface of the new dam wall.
SAHRA Rating: 3C

FIG. 13: CROSS-SECTION OF THE BROKEN HOGSETT DAM WALL



The Raising Of The Munnik Dam

The Munnik Dam post-dates 1966 and is not protected by heritage legislation. The dam wall will be raised resulting in an approximate 50m extension to the dam in places. The backwater flow will affect an historical railway bridge (fig. 14). This bridge predates 1945: fig. 6b indicates that the railway was already in disuse and had been moved further north to its current position. The highwater mark will not negatively affect the bridge more than the existing stream does.

FIG. 14: HISTORICAL RAILWAY BRIDGE AT MUNNIK DAM

The survey noted an extensive scatter of Early, Middle, and Late Stone Age stone tools within the existing dam levels (fig. 15). These were exposed on the sandstone floor as the Munnik Dam dried up. They include:

- ESA
  - Quartzite chopper
- MSA
  - 2 x complete unifacial points on hornfels
  - Several demineralised hornfels (utilised) flakes
- LSA
  - Hornfels bladelet core
  - Quartz irregular core
  - General flakes on quartzite, quartz and hornfels
- ISA
  - Irregular cores on hornfels
  - ochre

FIG. 15: STONE TOOLS AT MUNNIK DAM

Significance: Both the bridge and stone tools are of low significance.

Mitigation: No further mitigation is required.

SAHRA Rating: 3C

Upgrading Of The Waste Water Treatment Works And Sewers

The most recent plan is to replace and upgrade existing pipes and install one pumpstation to the existing wastewater treatment works. This pipe will run along the edge of town where the town dam used to be, i.e. in the existing wetland, to the WWTW.

The pipeline will be placed in the Dordrecht Commonage, and specifically in an area that has been demarcated with alien trees (fig. 16). These trees were in existence before 1945, and fig. 6b shows that they were planted in two circles within a polygon. There are a few buildings on the eastern side. The purpose for the trees is currently unknown, but they could have been used as an 'afsaal', or outspan outside of the town. The Surveyor General does not have the title deeds and surveys for this section uploaded yet. The trees could be viewed as part of a cultural landscape, however it is unlikely that the pipeline will damage the overall landscape. No mitigation is required for the trees.

The proposed pipeline does not pass near the older houses and minimally impacts on the trees. The patterns created by the original trees have mostly disappeared as the trees died and no replacement occurred. The trees are of low significance and no further mitigation is required.

The WWTW might be expanded in the future. For this reason, I surveyed a 100m radius around the existing structures and north of the golf club. Occasional LSA and MSA stone tools were noted: these are generic stone tools similar to those at Munnik Dam (fig. 17). These are in a secondary context and have no significance.

Significance: Both the tree feature and the stone tools are of low significance.

Mitigation: No further mitigation is required. Although as little impact as possible on the tree feature should be made.

SAHRA Rating: 3C

FIG. 16: TREE FEATURE AT DORDRECHT

FIG. 17: STONE TOOLS NEAR THE WWTW

Water Treatment Works

A pipeline from the Hogsett Dam to the existing water treatment works will be replaced. A smaller reservoir is planned just above the facility. The area is above a sandstone ridge that was potentially sensitive for rock art (fig. 18). The overhangs were very weathered and no paintings were observed. There were a few names engraved and/or painted at some overhangs. One shelter had a broken sherry bottle above the ground on a ledge. This would normally be considered an ancestral offering site; however, given the amount of broken bottles along this area, it is probably litter.

FIG. 18: OVERHANGS ALONG THE SANDSTONE ABOVE WATER WORKS

Significance: The overhangs are of low significance

Mitigation: No further mitigation is required.

SAHRA Rating: N/A

Cemetery

The formal town cemetery dates back to the 19th century. More recently, there has been an apparent informal cemetery to the south that extends near to the access road. The eastern border of this cemetery has a road and pipeline halfway up the hill. All future servitudes need to mitigate for the informal cemetery, as it has no fences or walls.

Significance: The entire cemetery is of high significance.
Mitigation: A wall or fence should be placed around the informal cemetery, however, this is not the responsibility of this project.
SAHRA Rating: 3A

CONCLUSION

A desktop study and field survey was undertaken for the proposed Dordrecht water and sanitation services upgrades; Dordrecht, Eastern Cape. An initial screening exercise was undertaken in 2016 for the Water Supply Scheme. This indicated that the area had potential heritage sites. A desktop survey and then a field survey was undertaken to determine a more precise account of the heritage resources in the study area and if any red flags occurred.

The desktop noted that the Hogsett Dam is older than 60 years in age. There are several built features at the dam that probably related to the original dam. These features may need to be assessed by a qualified historical architect if ECHPRA requires it. The features will need to be destroyed as the dam wall needs to be rebuilt after it collapsed in 2011. The spillway is too small to handle the proposed volume of water and will need to be removed.

The Munnik Dam is recent and does not require further mitigation. While stone tools were noted within the dam area, these were in a secondary context and had little significance.

The raising of the Munikk Dam will have a lower heritage impact than the rebuilding of the Hogsett Dam. However, this is a general statement since the Hogsett Dam is currently in ruin and unused. Moreover, the material for the Hogsett Dam can be preserved and/or partially re-used. ECHPRA will need to make the final decision on the Hogsett Dam.

There are three options for the proposed bulk sewer pipelines. Option 1 will use existing infrastructures and thus will not require further mitigation. Options 2 and 3 have new areas that will be excavated.

No mitigation is required for the trees, as they will be minimally effected.

If excavations exceed 2m in depth in non-dolerite areas, for new pipelines, then a PIA management plan will be required.

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Maps:

96_002_01375 – 01377

96_003_01339 – 01340

96_004_01334

3127AC Dordrecht 1966, 2003

EXPERIENCE OF THE HERITAGE CONSULTANT

Gavin Anderson has a M. Phil (in archaeology and social psychology) degree from the University of Cape Town. Gavin has been working as a professional archaeologist and heritage impact assessor since 1995. He joined the Association of Professional Archaeologists of Southern Africa in 1998 when it was formed. Gavin is rated as a Principle Investigator with expertise status in Rock Art, Stone Age and Iron Age studies. In addition to this, he was worked on both West and East Coast shell middens, Anglo-Boer War sites, and Historical Period sites.

DECLARATION OF INDEPENDENCE

I, Gavin Anderson, declare that I am an independent specialist consultant and have no financial, personal or other interest in the proposed development, nor the developers or any of their subsidiaries, apart from fair remuneration for work performed in the delivery of heritage assessment services. There are no circumstances that compromise the objectivity of my performing such work.

Gavin Anderson
Archaeologist/Heritage Impact Assessor

APPENDIX A

PALAEONTOLOGICAL DESKTOP SURVEY

THE DORDRECHT WATER & SANITATION SERVICES UPGRADES; DORDRECHT, EASTERN CAPE
DESK-TOP PALAEONTOLOGY REPORT

FOR

UMLANDO: Archaeological Surveys & Heritage Management
PO Box 102532, Meerensee, KwaZulu-Natal 3901
phone (035)7531785 fax: 0865445631
cell: 0836585362 / 0723481327
Facebook: Umlando and Umlando SouthAfrica
Email:umlando@gmail.com

Dr Alan Smith
Alan Smith Consulting
asconsulting@telkomsa.net

July 2019

EXECUTIVE SUMMARY

According to the geology any work to the east of dordrecht will be done in Dolerite which is not fossiliferous. The town of Dordrecht itself is in Moleno Formation. If deep excavations are planned (Options 2 or 3) within the town then they should be inspected by a palaeontologist, especially if the rock is fine or silty grained.

PROPOSED PROJECT

Information as supplied by Umlando. The town of Dordrecht in the Eastern Cape is currently experiencing critical water shortages and there is an urgent need to secure a long-term water supply. An increased level of service delivery to full waterborne sanitation for the entire town is also planned for the near future, which will put further strain on the water supply. To provide for the necessary improvements to the level of water and sanitation delivery, the Water Services Authority (Chris Hani District Municipality) has identified a number of projects that they wish to implement. These include reinstating the existing Hogsett dam, raising the wall of the Munnik dam,
upgrading the Water Treatment Works (WTW), upgrading the Waste Water Treatment Works (WTW) and upgrading and/or reconfiguring the bulk sewers. Environmental authorisations will be required, and specialist heritage input will be needed as part of the environmental impact assessment process.

The proposed activities will take place within the town of Dordrecht, Eastern Cape. Dordrecht is about 70km north-northeast of Queenstown and can be accessed via the R392 from Queenstown or from the R56 from Indwe or Molteno. It forms part of the Emalahleni Local Municipality which falls under the Chris Hani District Municipality (Fig. 1).

Fig. 1: Location Map (Image source Umlando).

There are two main components to the project, one that relates to the upgrade of the water supply services and the other that relates to the upgrade of the sanitation service. This will include:
:

1. The re-instatement of the Hogsett Dam
2. The raising of the Munnik Dam

3. The upgrading of the Water Treatment Works
4. The upgrading and/or reconfiguration of the bulk sewers

Aurecon has been appointed by the Chris Hani District Municipality to undertake the necessary engineering and environmental studies. Umlando has been subcontracted to undertake the HIA desktop study and possible Phase 1 survey.

LOCATION

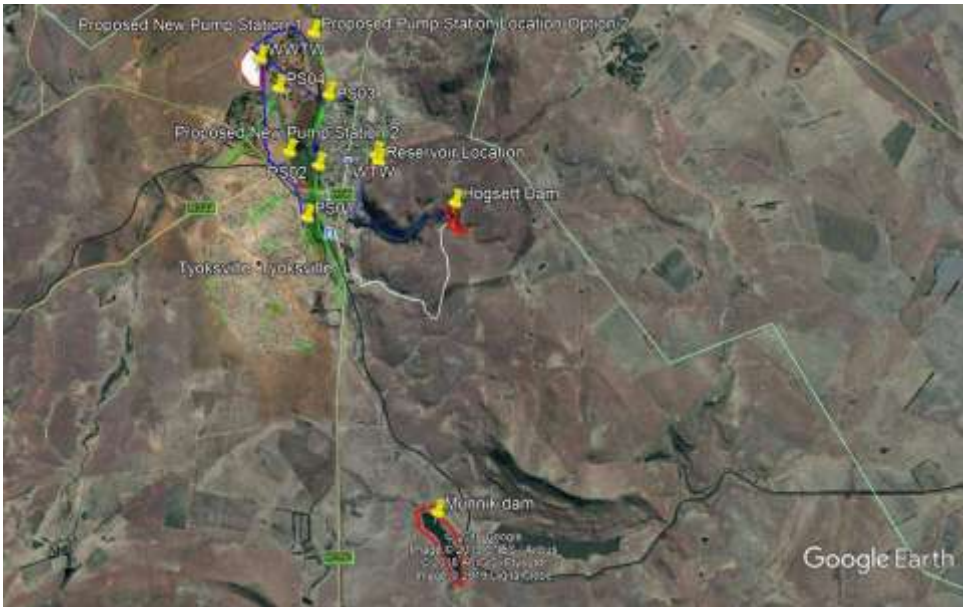

Fig. 2: The proposed development area.

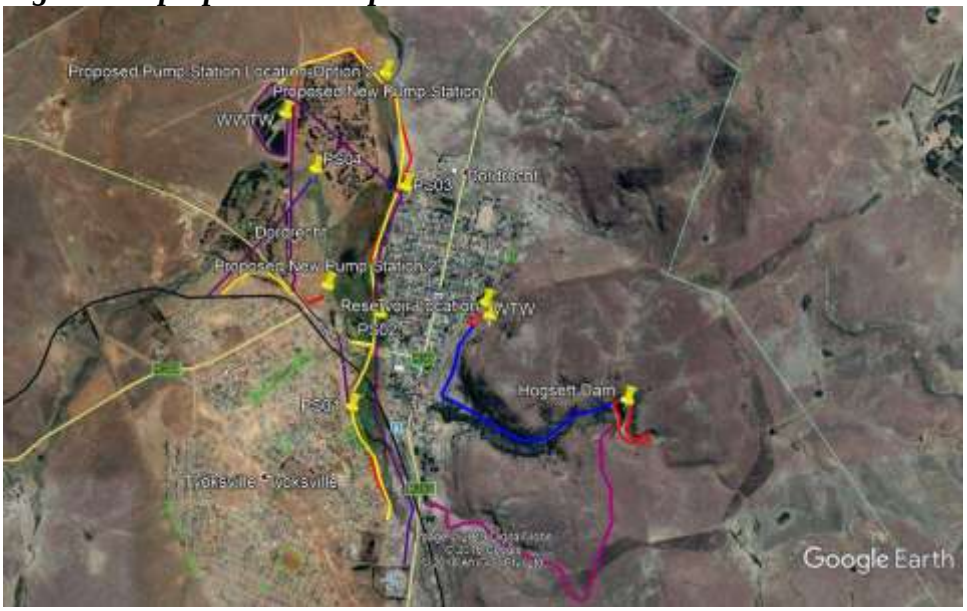

Fig. 3: Pipeline options: Option 1 (purple), Option 2 (yellow) and Option 3 (red). Image source Umlando.

PROPOSED PROJECT

There are three options for the pipelines, each with pump stations (Fig. 3). Option 1 (purple on map) uses an existing system. Option 2 (yellow on map) and 3 (red on map) are partly aligned with Option 1, but also occur as new lines. Changes and renovations will also be done to the Hogsett and Munnick Dams.

GEOLOGY

The project occurs on the border of the Molteno Formation and Dolerite (Fig. 4). The Molteno is fossiliferous (Bordy et al, 2005). There is confusion between Dolerite and Elliot Formation (highly fossiliferous) on the Queenstown3126 Geological Map (Fig. 4), however Fig. 5 confirms that the rock type is Dolerite.

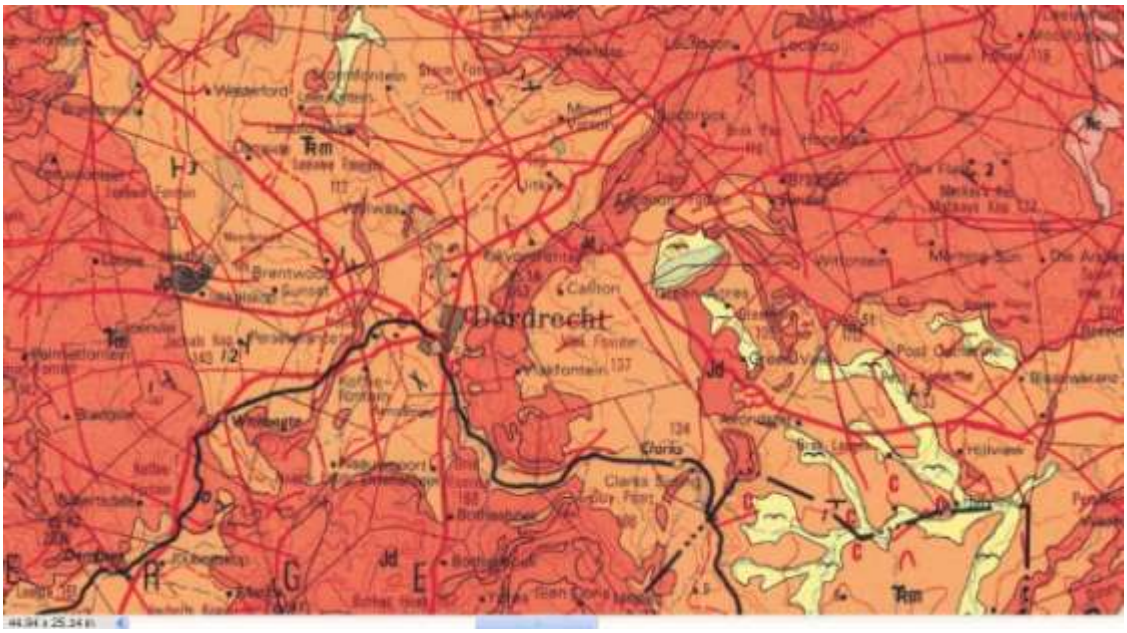

Fig. 4: Extract from the Queenstown3126 Geological map. Red is both TRE (Elliot Formation) and Dolerite (Jd) and Orange is Molteno Formation. The yellow refers to alluvium. It appears that the colour coding is too close.

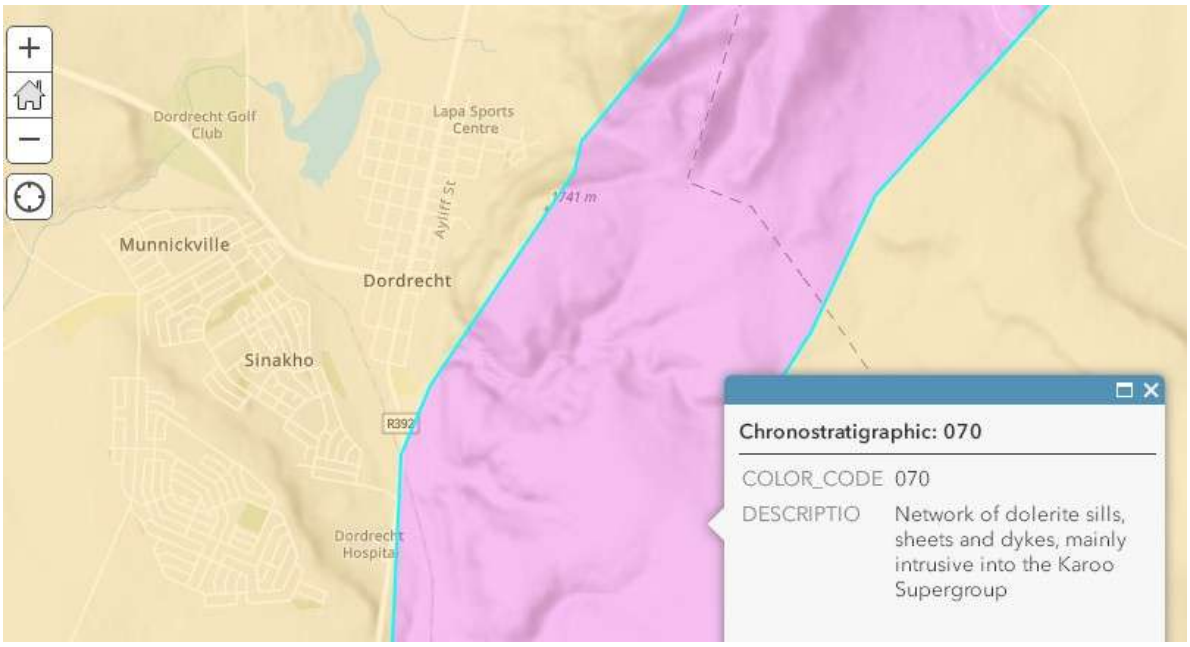

Fig. 5: This image is from the 1: 1000000 geological map. It confirms dolerite. arcgis.com/home/webmap/viewer.html?useExisting=1&layers=52754dd08c3345fb9f6a968a5d571f4a&layerId=0

PALAEONTOLOGY

The WWTW, Hogsett and Munnick Dams are located on Karoo dolerite area, which is an intrusive igneous rock of Middle Jurassic age and not fossiliferous.

The town of Dordrecht which is within the project area is underlain by the Late Triassic Molteno Formation, a part of the Karoo Sequence. This formation is believed to have formed within braided rivers (Bordy et al, 2005). These rocks are coarse-grained sandstones and less likely to contain fossils. However it is described as being fossiliferous (Bordy et al., 2005) and contains plant and insect fossils (Anderson, 1974). These fossils would only be expected in fine or silty sandstones..

A previous PIA study, ~30km southwest of Dordrecht (Millsteed, 2013) indicates a high possibility of encountering significant fossil material. All new excavations for Options 2 and 3, deeper than 2m will require a palaeontological field inspection.

Option 1 (purple on map: Fig. 3) uses an existing footprint and no further palaeontological work will be required provided that it does not break new ground.

CONCLUSIONS

According to the geology, the work to be done to the east of Dordrecht will be in Dolerite which is not fossiliferous. The town of Dordrecht itself is in the Molteno Formation and if deep excavations (>2m) are planned within the town then they should be inspected by a palaeontologist, if they are fine to silty sandstone.

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Queenstown3126 1: 25 000 Geological Map Council for Geosciences, Pretoria.