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MANYABE CONSULTANCY

DRAFT SCOPING REPORT FOR PUBLIC COMMENT, FOR THE PROPOSED CONVERSION OF WEST WASTE ROCK DUMP 1 - EXTENSION INTO TAILINGS STORAGE FACILITY 3 AT WEST MINE FOR THARISA MINERALS

DMRE REFERENCE NUMBER: NW30/5/1/2/3/2/1/358
MANYABE CONSULTANCY (PTY) LTD PROJECT CODE: 202210

tharisa

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Date: August 2022

MANAGING DIRECTOR: MPHO MANYABE
COMPANY REG: 2014/063679/07

DOCUMENT HISTORY - MANYABECONSULTANCY

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01	29 July 2022	Mpho Manyabe	Initial draft for commenting by the client
02	08 August 2022	Mpho Manyabe	Final draft for distribution for public review

APPROVAL FOR RELEASE

Name	Title	Signed
Ms. Mpho Manyabe	Manyabe Consultancy: Managing Director and Lead EAP	

THARISA MINERALS REPRESENTATIVE CONTACT DETAILS

Contact Person	Mr. Patrick Sibuyi
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DECLARATION BY THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

I **Mpho Manyabe**, declare that -

- I act as the independent Environmental Assessment Practitioner (EAP) in this application for the conversion of West Waste Rock Dump (WWRD) 1 - Extension into Tailings Storage Facility (TSF) 3 at west mine.
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant.
- I declare that there are no circumstances that may compromise my objectivity in performing such work.
- I have expertise in conducting Environmental Impact Assessments (EIAs), including knowledge of the relevant Acts, Regulations and any guidelines that have relevance to the proposed activity.
- I will comply with the Act, Regulations and all other applicable legislation, policies and guidelines.
- undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority.
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to Interested and Affected Parties (I&APs) and the public at large and that participation by I&APs is facilitated in such a manner that all I&APs, state department and competent authority will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application.
- I will ensure that the comments of all I&APs are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by I&APs in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report.
- I will keep a register of all I&APs that participated in a public participation process (PPP); and all the particulars furnished by me in this form are true and correct.
- I will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations.

Signature of the EAP

Date: 29 July 2022

EAP Company: Manyabe Consultancy (Pty) Ltd

EXECUTIVE SUMMARY

PROJECT INTRODUCTION AND BACKGROUND

Tharisa minerals (Pty) Ltd (Tharisa) is an opencast mining operation that produces chrome and platinum group metals (PGM) concentrate. Tharisa holds existing environmental authorisations (EAs) and licenses under the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA), the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended (NEMA), the National Environmental Management: Waste Act, 2008 (Act. 59 of 2008) (NEM: WA) and the National Water Act, 1998 (Act. No 36 of 1998) (NWA).

Manyabe Consultancy (MC) have been appointed by Tharisa as an independent Environmental Assessment Practitioner (EAP), to undertake a Section 102 amendment application in terms of the MPRDA in order to amend the Environmental Management Programme (EMPr); to undertake Environmental Impact Assessment (EIA) to amend an EA in terms of the NEMA; and to amend the Waste Management License (WML) in terms of the NEM: WA.

The competent authority for the above mentioned amendments is the Department of Mineral Resources and Energy (DMRE). The Department of Water and Sanitation (DWS) is the commenting authority, who would make recommendations on the applications for approval by the DMRE.

A separate Water Use License Application (WULA) process is being undertaken by Green Gold Group on behalf of Tharisa, for the various activities that will occur within the mine, *inter alia*, conversion of West Waste Rock Dump (WWRD) 1 - Extension into Tailings Storage Facility (TSF) 3 at west mine, as the activities are a listed as water uses under Section 21 of the NWA.

Tharisa holds the following EAs and licenses:

- A Mining Right (MR) (Reference No.: NW30/5/1/2/3/2/1/358) issued by the DMRE on 19 September 2008 and amended in July 2011;
- An approved EMPr (Reference No.: NW 30/5/1/2/3/2/1/358EM) issued by the DMRE on 19 September 2008;
- An EA (Ref No.: NWP/EIA/159/2007) issued by the North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT) on 23 October 2009;
- An EA (Ref No.: 14/12/16/3/3/2/408) issued by the Department of Forestry, Fisheries and the Environment (DFFE) on 15 November 2012;
- An EA (Ref No.: NWP/EIA/50/2011) issued by the DEDECT on 29 April 2015;
- An addendum to the EIA and EMPr (Ref No.: NW/30/5/1/2/3/2/1/358EM) issued by the DMRE on 24 June 2015;
- An addendum to the EIA and EMPr (Ref No.: NW/30/5/1/2/3/2/1/358EM) issued by the DMRE on 14 August 2020 for the Waste Water Treatment Plant (WWTP);
- An addendum to the EIA and EMPr (Ref No.: NW/30/5/1/2/3/2/1/358EM) issued by the DMRE on 08 August 2021 for fuel and waste storage capacity increase;
- A Section 24G EA (Ref No.: NW/30/5/1/2/3/2/1/358EM) issued by the DMRE on 10 August 2021; and
- An amended Integrated Water Use Licence (IWUL) (Licence No. 03/A21K/ABCGIJ/1468) issued by the DWS in November 2020.

PROJECT LOCALITY

Tharisa mine is located on the farms Rooikopies JQ 297, Elandsdrift JQ 467 and Kafferskraal JQ 342, near the town of Marikana within the Rustenburg Local Municipality, Bojanala District Municipality, North West Province. Access to the site is via a secondary road which intersects N4 to the south of the mine.

OVERVIEW OF THE EXISTING OPERATIONS AND PROPOSED PROJECT INFRASTRUCTURE

Tharisa mine has been operational since 2008. Mining is undertaken in two mining sections, namely the East Mine and West Mine, using conventional open pit truck and shovel methods. Waste rock from the open pit areas is either stockpiled on WRDs or backfilled into the open pits as part of concurrent rehabilitation. The two mining sections are separated by the Sterkstroom River and Marikana Road.

The following mine infrastructure exists at the mine.

- Haul roads;
- Run-of-mine;
- Concentrator complex;
- Product and topsoil stockpiles;
- WRDs;
- Dormant and active TSFs; and
- Offices, workshops, change house and access control facilities.

As part of its on-going mine planning, Tharisa has identified the need for an additional TSF on site i.e. TSF3. Tharisa mine is growing its mining output and as such, more tailings are being produced. The current facilities are nearing their full capacity, hence the need to develop a new TSF. The conversion of a portion of WWRD 1 into TSF3 will ensure that the Life of Mine (LoM) is extended by providing alternative waste storage when the current facilities reach their end of life. The proposed conversion will occur within the approved mining footprint, which will result in minimal negative impacts on the physical environment while contributing positively to the socio-economic environment. The proposed project entails the conversion of WWRD 1 - extension into TSF3 at west mine.

SCOPING AND ENVIRONMENTAL IMPACT REPORTING PROCESS

EIA is a planning and decision-making tool that is used to identify the environmental consequences of a proposed project, before the development takes place. The purpose of the EIA is to describe the potential consequences of the proposed development in environmental, economic and social terms. Public issues and concerns must therefore be identified timeously so that these can be recorded and responded to in the EIA. All comments received in writing will be included in the submission to the competent authority for consideration.

The NEMA EIA Regulations define two broad processes for an EIA, namely: Basic Assessment (BA) and Scoping and Environmental Impact Reporting (S&EIR). S&EIR is applicable to all projects likely to have significant environmental impacts due to their nature or extent, activities associated with potentially high levels of environmental degradation, or activities for which the impacts cannot be easily predicted. A BA is required for projects with less significant impacts or impacts that can easily be mitigated. The proposed project entails the undertaking of the EIA - S&EIR in terms of the EIA Regulations 2014, as amended.

The EIA consists of two phases, as follows:

The first phase is a Scoping Study, which identifies potential issues requiring more detailed investigation by undertaking specialist studies. A complete list of specialist studies and the issues that should be addressed have been detailed in this Draft Scoping Report, which is being made available for public and authority review.

The second phase is the Impact Assessment phase, during which detailed investigations of the issues identified during scoping, will be undertaken.

This Draft Scoping Report has been compiled in terms of Appendix 2 of the NEMA EIA Regulations of 2014, as amended, as well as the requirements of the Scoping Report template issued by the DMRE. All comments received during the review of the Draft Scoping Report will be incorporated into the Final Scoping Report for submission to the DMRE.

Before Tharisa can commence with the proposed conversion of WWRD 1 - extension into TSF3, amendments to the existing approvals need to be undertaken in terms of the following national legislation:

- The NEMA, for the listed activities stipulated in the NEMA EIA Regulations of 2014, as amended;
- The MPRDA, for the amendment of the EMPr in accordance with Section 102 of the MPRDA; and
- The NEM: WA, for waste management activities stipulated in Government Notice Regulation (GNR.) 921, promulgated under NEM: WA.

The approvals in terms of the NEMA, NEM: WA and MPRDA are being applied for to the North West DMRE.

The S&EIR process is being undertaken as per the following legislation:

Integrated EA and WML amendment application

The proposed project entails the undertaking of the EIA – S&EIR in terms of the EIA Regulations 2014, as amended; promulgated in terms of the NEMA as listed in GNR. 983, 984 and 985, as amended. These activities are identified as actions that may not commence without an EA from the relevant competent authorities.

According to GNR. 921 of 29 November 2013, as promulgated under the NEM: WA, for Category "B" activities, a person who wishes to commence, undertake, or conduct an activity listed under the Category, must conduct a S&EIR process, as stipulated in the EIA regulations under section 24(5) of the NEMA as part of a WML application.

Section 102 amendment application

In terms of Section 102 of the MPRDA, the application procedure to be followed concerning the EMPr amendment is a S&EIR process. Section 102 of the Act states that "*a reconnaissance permission, prospecting right, mining right, mining permit, retention permit, technical corporation permit, reconnaissance permit, exploration right and production right work programme; mining work programme, EMPr, and Environmental Management Plan (EMP) may not be amended or varied (including by extension of the area covered by it or by the addition of minerals or a share or shares or seams, mineralised bodies, or strata, which are not at the time the subject thereof) without the written consent of the Minister*".

It must be noted that Activity 21D has been included into Listing Notice 1 on the NEMA EIA Regulations, of 2014, as amended, which now requires that a **BA** must be undertaken as part of a Mining Right amendment process in terms of section 102 of the MPRDA. Due to the NEMA and NEM: WA listed activities, which require a S&EIR process to be followed, Section 102 amendment will also follow the S&EIR process.

A separate WULA process is being undertaken by Green Gold Group on behalf of Tharisa, for the various activities that will occur within the mine, *inter alia*, the conversion of WWRD 1 - extension into TSF3 at west mine, as the activities are a listed as water uses under Section 21 of the NWA.

PROJECT ALTERNATIVES

In terms of the NEMA EIA Regulations 2014, as amended, all environmental reports must contain a description of any feasible and reasonable alternatives that have been identified, including a description and comparative assessment of the advantages and disadvantages that the proposed activity and alternatives will have on the environment and on the community, that may be affected by the activity. Every S&EIR process must therefore identify and investigate alternatives, with feasible and reasonable alternatives to be comparatively assessed. If no alternatives exist, proof that an investigation was undertaken and motivation indicating that no reasonable or feasible alternatives other than the proposal/ preferred option and the no-go option exist.

Design Alternatives:

At least two (2) options are being considered i.e. no barrier option and the base preparation/ barrier option. MC as the appointed EAP understands that both options have associated risk impacts, and therefore mitigation measures will be prescribed during the Impact Assessment phase. The designs will then be tested further. MC

will give evidence that either design would be the Best Practicable Environmental Option (BPEO) from the environmental and socio-economic perspective, and that all risks will be appropriately managed. The risk assessment will enable an evaluation of the effectiveness of either alternative.

Site Alternatives:

Tharisa Mining Right boundary has significant space constraints due to the existing infrastructure. Tharisa mine is also bordered by other mining companies (Western Platinum, Marikana Platinum and Samancor mines) on the West, North and Eastern boundaries of the Tharisa Mining Right area. The N4 and farming community of Buffelspoort is located to the South of the Tharisa mine. The addition of TSFs is dictated by the space available within the mining right area. To minimise the extent of the project disturbance, portions of the project footprint will be located on previously disturbed areas. No location alternatives for the proposed project could be considered. Given that the project components relate mainly to storage of waste material in order for mining to effectively take place and optimising approved mining activities, no real site alternatives exist for the project.

BASELINE ENVIRONMENT

An overview of the baseline biophysical and socio-economic environment of the proposed conversion of WWRD 1 - extension into TSF3 project is given below. This information was obtained from the existing data presented in the approved environmental reports and specialist studies reports which were undertaken previously, for similar activities at the Tharisa mine. The data will be updated based on the specialist studies which are currently being undertaken for the proposed project.

Environmental Aspect	Description
Geology	The mine and the proposed project area are located in the western limb of the Bushveld Igneous Complex. Both platinum and chrome ore resources occur on site and are being mined by the approved mining operations. There are geological structures in the area that may influence groundwater flow. Groundwater is one of the sources of water supply for some of the surrounding communities and contributes to the baseflow of streams, including the Sterkstroom. The target ore body is the Chrome Middle Group (MG1 –MG4). Generally, the strike is east-west, and the dip is to the north. The entire MG package is developed over a true thickness of 47m on the eastern portion of Kafferskraal and thins to 25m to the west near the Spruitfontein upfold. The MG package has four main chromite layers hosted in anorthosite, norite and feldspathic pyroxenite.
Climate	The mine falls within the Highveld Climatic Zone. This is a warm temperate climate. Rain generally occurs in the spring and summer months between October and March and is generally characterised by high intensity rainfall often in the form of thunderstorms (on average 75 storms per annum) with lightning. The area also receives strong, gusty winds and the frequency of hail in the area is high (on average four to seven times per season). Tharisa mine falls within highveld climatic conditions, with hot and wet summers and cold and dry winters. On average, winds blow from the north-west (mainly during the day time) and south east (mainly at night), however seasonal differences are observed. Wind speeds hardly reach speeds higher than 5m/s. Wind direction, speed and atmospheric conditions influence the area of impact and the extent to which pollution can occur. The highest concentrations for low level releases would occur during weak wind speeds and stable (night-time) atmospheric conditions. These climatic aspects need to be taken into consideration during the assessment of impacts and the design and implementation of the mitigation measures.
Topography and Land Use	The topography of the site has been altered by approved mining activities that range from open pits to mineralised waste facilities (WRDs and TSFs). The site proposed for TSF3 was previously approved as WWRD1 extension, and therefore this application is for an amendment of the WWRD1 extension to be converted into TSF3. The presence of project infrastructure and mining activities has the potential to change the natural topography. A change in topography has the potential to influence surface water flow, the location of soils, the visual character of a landscape and the safety of third parties and animals. Through the development of the approved mine, land within the mining footprint has changed from a mix of agriculture and residential (including community activities) to mining. The landscape character and quality of the visual resource has been altered. Land within the project footprints was mainly agricultural or transformed, with some pockets of natural vegetation and some private homesteads and associated structures (within the central WRD footprint). Land surrounding the mine is mostly used for mining operations, crop farming, livestock grazing and general community activities. Residential areas surrounding the mine range from private farmsteads to villages of varying scales including a primary school.
Surface Water	Tharisa mine is located within the Crocodile West and Marico Water Management Area (WMA). Four drainage systems occur in the Tharisa Mining Right area. These include the perennial Sterkstroom, non-perennial tributaries of the Brakspruit (a tributary of the Sterkstroom), non-perennial tributaries of the Maretlwane (a tributary of the Sterkstroom) and a non-perennial tributary of the Elanddriftspruit. The Mining Right area falls within the quaternary catchment A21K, which falls within the Lower Crocodile Secondary Catchment. The A21K catchment area has a total catchment area of 856km^2 and an estimated mean annual runoff of 22.46 million m^3/year. The perennial Sterkstroom flows from the Buffelspoort Dam, south of the N4, through the mining operations, between the East and West mining areas. Two unnamed non-perennial tributaries of the Brakspruit originate in the north-west

Environmental Aspect	Description
	of the mine and drain the western side of the Mining Right area. Mining of the west pit has taken place within the headwaters of these tributaries. The eastern mining area is drained by two non-perennial drainage lines that formed a tributary to the Maretlwane. Mining of the East Pit has taken place within the headwaters of these drainage lines. In this regard, the TSF3 is approximately 170 m west from the Sterkstroom perennial river. Mine related activities have the potential to influence the natural drainage of surface water through the collection of runoff from stormwater management infrastructure and collection in the open pits. The project also has the potential to result in the contamination of the surface water resources through seepage from the TSF.
Ground Water	The mine is underlain by a shallow upper weathered aquifer and a deeper fractured aquifer. The weathered overburden is highly variable in thickness from 3m to more than 30 m based on existing borehole logs and evidence of borehole depths. The deeper fractured bedrock aquifer is characterised by very low matrix permeability, poorly connected joints/fractures and dolerite/diabase dykes (that may act as barriers to groundwater flow). Quaternary catchment A21K receives an estimated average annual groundwater recharge of 24.4 million m^3 (Mm^3), of which 3.4 Mm^3 per annum or 13.8% is required for the Reserve, consisting of both basic human needs (estimated at 0.5Mm^3/a) and an ecological component (estimated at 2.9Mm^3/a). This equates to an approximate recharge across the catchment of about 28 mm/a. The regional groundwater flow is closely related to the topography, and groundwater flows from higher lying ground in the south towards lower lying areas in the north and towards watercourses, which occur in lower lying areas. Of major importance for groundwater flow in the area is the presence of a relatively impermeable interface between the upper shallow weathered aquifer and the deeper, fractured aquifer.
Terrestrial Ecology (Flora and Fauna)	The mine falls within the Marikana Thornveld which is an important vegetation type that requires careful consideration when developing mining projects. The project area includes a terrestrial Critical Biodiversity Area (CBA) and a critically endangered river (the Sterkstroom) defined by the North-West Province 2009 biodiversity assessment, and a High Biodiversity area in terms of the recently published Mining Biodiversity Guidelines. It is important to note that these national guidelines and assessments were published after the mine was approved in 2008. The proposed TSF also falls within an Ecological Support area (ESA). The area has been transformed by agricultural and mining activities (both on the project sites and in the surrounding areas), yet aquatic and terrestrial habitat, although limited, does still exist within the project area which is suitable for fauna and flora species, including some Red Data and protected species.
Soil and Land Capability	The soils found at the project site are similar to those found within the approved mine footprint. Soils are structured with a high clay content. Beneath the mineralised waste facilities, the in-situ clay type soils are kept in place and needed as part of the liner system. Land capable for use as grazing dominates the project area.
Air Quality	Existing sources of emissions in the region and the characterisation of existing ambient pollution concentration is fundamental to the assessment of cumulative air impacts. A change in ambient air quality can result in a range of impacts which in turn may cause a disturbance and/or health impacts to nearby receptors.
Noise	The mine is located in an area where the character of ambient noise is already affected by industrialisation and economic activity, which over time, has resulted in an increase in road traffic noise and noise generated by intensive mining activities by surrounding mines. Road traffic emanates specifically from the N4 and various secondary roads, such as the Marikana Road that runs between the East and West mining areas at the Tharisa mine. The N4 has a wide noise footprint, affecting people living within a zone of approximately 1.2 km either side of the road, while noise generated by surrounding mining activities affects communities, farmers and other third parties in the immediate surrounds.
Visual Aesthetic	The visual character of an area is determined by considering landscape character, scenic quality, sensitivity of the visual resource, sense of place and visual receptors. Mine-related infrastructure and activities has the potential to alter the visual aspects in a project area and surrounding area. The project area is largely disturbed and is characterised by Tharisa's mining-related infrastructure and activities as well as private farming and community related activities. Natural elements within the Mining Right area exist, including various scattered patches of natural habitat and the Sterkstroom River, separating the East and West mining areas. However, the Marikana Road is in close proximity and contributes a low scenic quality in contrast to the aforementioned natural features. The proposed TSF3 site consists of natural vegetation which has been disturbed by community activities. It follows that the overall scenic quality within the proposed TSF3 project area is very low to low.
Heritage/ Archaeology and Palaeontology	Heritage resources of high significance occur within the extended footprint of the central WRD. These include graves and houses of historical significance. No paleontological resources are expected to occur within the mining right area. Tharisa mine is underlain by non-fossiliferous rocks of the Rustenburg Layered Suit of the Bushveld Igneous Complex that has intruded through the Transvaal Supergroup rocks. These rocks have been highly metamorphosed and there is no chance that fossils may be preserved within. Furthermore, the PalaeoMap of South African Heritage Resources Information System (SAHRIS) indicates the palaeosensitivity within the project area as "grey" denoting an insignificant/ zero palaeosensitivity.
Socio-Economic Environment	The mining sector is a big contributor to the economy of South Africa as well as the region. The Rustenburg area has a large concentration of mining activities, with the mining sector creating the biggest job opportunities. The proposed project to be implemented has many positive benefits and spinoffs both during the construction and operational phases. The benefits and positive impacts have a countrywide reach.

SPECIALIST STUDIES

A number of potential impacts have been identified which will be considered further in the process as required. Typical impacts that will be investigated as part of this EIA include:

- Geology;

- Surface water;
- Ground water;
- Aquatic Ecology;
- Wetlands;
- Terrestrial Ecology (Flora and Fauna);
- Soil and Land Capability;
- Air Quality;
- Noise;
- Visual Aesthetic;
- Heritage/ Archaeology and Palaeontology; and
- Socio-Economic Environment.

Specialist baseline and impact assessments will be conducted for these potential impacts.

SPECIALIST STUDIES

The following specialists' studies will be undertaken, for the various environmental aspects:

- Soils, Land Capability and Land Use/ Agricultural Potential Assessment.
- Surface Water Study, including Wetland Delineation, Freshwater (Aquatic) and Terrestrial Ecology.
- Air Quality Impact Assessment Study.
- Noise Impact Assessment.
- Heritage Impact Assessment (HIA) screener and Exemption of Palaeontological Impact Assessment.
- Social Impact Assessment.
- Visual Impact Assessment.

The following studies have been undertaken, and their findings will be incorporated into the EIR/ EMPr.

- Geohydrological Investigations.
- Geochemistry study and Waste Assessment.

PUBLIC PARTICIPATION

PPP process is being undertaken in terms of regulation 41 of the EIA 2014 Regulations, as amended, for the proposed project triggering listed activities under the NEMA, MPRDA and NEM: WA. MC on behalf of Tharisa took into account all relevant guidelines applicable to public participation as contemplated in section 24J of the NEMA. MC are giving notices to all Interested and Affected Parties (I&APs) of the applications which are being subjected to PPP by undertaking the following:

Announcement of the project and the Draft Scoping Report availability

The project is being announced to the public from **Friday, 12 August 2022**, by means of the placement of a newspaper advertisement and site notices. Background Information Documents (BIDs) have been distributed to I&APs to create awareness of the proposed project. MC have announced the availability of the Draft Scoping Report. The report is being subjected to a PPP of at least 30 days and the Final Scoping Report will reflect the incorporation of comments received, including any comments from the competent and commenting authorities.

The following processes are being undertaken to announce the project and the Draft Scoping Report:

- An I&AP database has been opened and is being maintained, and includes all potential I&APs in respect of the application in accordance with Regulation 42.
- Letters are being sent to all I&APs, written in any of the manners provided for in section 47D of the NEMA, announcing the project and the availability of the Draft Scoping Report, containing project information and a locality map to the municipal councillor of the ward in which the site is situated and any organisation of ratepayers that represent the community in the area, the municipality which has jurisdiction in the area,

any organ of state having jurisdiction in respect of any aspect of the activity; and any other party as required by the competent authority.

- Affected parties who cannot be reached via mail, fax or e-mail of the proposed project, are being visited for delivery of the letters. The letters have attached sheets which allow I&APs to register and/ or/ comment.
- Four (4) site notice boards have been fixed at a place conspicuous to and accessible by the public at the boundary of the site where the activity to which the application relates to.
- One (1) advertisement has been placed in the Rustenburg Herald Local newspaper.
- The Draft Scoping Report has also been made available on the MC website (https://manyabeconsultancy.com/stakeholder-engagement/); and at the Marikana Public Library.

Subsequent to the 30 days' period, all comments and representations received from I&APs will be considered and recorded in the Comments and Responses Report (CRR). All I&APs who would have participated in the PPP will be thanked, and their comments acknowledged.

The Draft Scoping Report is available for public comment from **Friday, 12 August 2022** to **Tuesday, 13 September 2022**.

CONCLUSION

This Draft Scoping Report has been complied in accordance with Appendix 2 of the NEMA EIA Regulations of 2014, as amended, and provides a description of the proposed project. The Draft Scoping Report entails the following:

- Details of the EAP who prepared the report; and the expertise of the EAP, including a curriculum vitae;
- The location of the activity, including 21 digit Surveyor General (SG) code;
- Locality Map;
- A description of the scope of the proposed activity, including all listed and specified activities triggered;
- A description of the activities to be undertaken, including associated structures and infrastructure;
- A description of the policy and legislative context within which the development is proposed, including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to the activity and are to be considered in the Impact Assessment;
- A motivation for the need and desirability for the proposed project, including the need and desirability of the activity in the context of the preferred location;
- A full description of the process followed to reach the proposed preferred activity, site and location of the development footprint within the site, including details of all the alternatives considered;
- Details of PPP undertaken in terms of regulation 41 of the Regulations;
- The environmental attributes associated with the alternatives, focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;
- The impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified impacts;
- Identification of positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;
- The possible mitigation measures that could be applied and level of residual risk;
- The motivation for not considering location alternatives;
- A concluding statement indicating the preferred alternatives, including preferred location of the activity;
- A plan of study for undertaking the Impact Assessment process to be undertaken;
- Description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;
- Description of the aspects to be assessed as part of the Impact Assessment process;
- Aspects to be assessed by specialists;

- Description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists;
- Description of the proposed method of assessing duration and significance;
- An indication of the stages at which the competent authority will be consulted;
- Particulars of the PPP that will be conducted during the Impact Assessment process;
- Description of the tasks that will be undertaken as part of the Impact Assessment process;
- Identification of suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.
- An undertaking under oath or affirmation by the EAP in relation to the correctness of the information provided in the report;
- An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and I&APs on the plan of study for undertaking the EIA;
- Any specific information required by the competent authority; and
- Any other matter required in terms of section 24(4)(a) and (b) of the Act.

It must however be noted that this Draft Scoping Report is being subjected to PPP for commenting by the general public and state departments in parallel with the submission of the application forms to DMRE. Comments and objections received from stakeholders will be recorder accordingly.

The following activities will take place as part of the planned S&EIR process going forward:

- The Draft Scoping Report will be finalised, and the Final Scoping Report will be submitted to the DMRE for approval once comments and feedback have been received from I&APs and authorities.
- The Specialists studies will be undertaken, and potential impacts as identified in this Draft Scoping Report will be assessed during the Impact Assessment Phase.
- A Draft EIR/ EMPr will also be compiled which will include management measures to avoid, mitigate and manage the potential impacts identified in the Impact Assessment. The report will also be subjected to PPP for another 30 days.
- Subsequently, the report will be finalised, incorporating comments from I&APs for submission to the DMRE.
- The DMRE will then decide on the submission. The decision will then be communicated to all stakeholders.

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As	Arsenic
BA	Basic Assessment
BBBEE	Broad Based Black Economic Empowerment
BIC	Bushveld Igneous Complex
BIDs	Background Information Documents
Ca	Calcium
CARA	Conservation of Agricultural Resources Act (Act No. 43 of 1983)
CBA	Critical Biodiversity Area
Cd	Cadmium
CEC	cation exchange capacity
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
Cr	Chromium
CRDP	Comprehensive Rural Development Programme
CRR	Comments and Responses Report
CV	Curriculum Vitae
DAFF	Department of Agriculture, Forestry and Fisheries
DEDECT	Department of Economic Development, Environment, Conservation and Tourism
DFFE	Department of Forestry, Fisheries and the Environment
DMRE	Department of Mineral Resources and Energy
DO	Dissolved Oxygen
DWAF	Department of Water Affairs and Forestry
DWEA	Department of Water and Environmental Affairs
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EC	Electrical Conductivity

EAP	Environmental Assessment Practitioner
ECA	Environment Conservation Act, 1989 (Act No. 73 of 1989)
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMPr	Environmental Management Programme
GDARD	Gauteng Department of Agriculture and Rural Development
GNR	Government Notice Regulation
HBr	Hydrogen Bromide
HCs	Hydrocarbons
HCl	Hydrogen Chloride
HFl	Hydrogen Fluoride
Hg	Mercury
HIA	Heritage Impact Assessment
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
IPAP	The Industrial Policy Action Plan
IWWMP	Integrated Water and Waste Management Plan
IWUL	Integrated Water Use Licence
I&APs	Interested and Affected Parties
K	Potassium
LoM	Life of Line
MC	Manyabe Consultancy (Pty) Ltd
MEC	Member of the Executive Committee
Mg	Magnesium
MG	Middle Group
MHSA	Mine Health Safety Act, 1996 (Act No. 29 of 1996)
Mn	Manganese
MPRDA	Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
MQF	Magaliesberg Quartzite Formation
MR	Mining Right
Na	Sodium
NAAQS	National Ambient Air Quality Standards
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:AQA	National Environmental Management Air Quality Act, 2004 (Act No. 39 of 2004)
NEMAA	National Environmental Management Amendment Act, 2008 (Act No. 62 of 2008)
NEM: WA	National Environmental Management: Waste Act, 2008 (Act. 59 of 2008)
NFA	National Forestry Act, 1998 (Act No. 84 of 1998)
NHRA	National Heritage Resources Act, 1999 (Act. No 25 of 1999)
NO_3-N	Nitrate
NO_X	Nitrogen oxides
NSSD	National Strategy for Sustainable Development
NWA	National Water Act, 1998 (Act No. 36 of 1998)
P	Phosphorous
PAHs	Polycyclic Aromatic Hydrocarbons
Pb	Lead
PGM	Platinum Group Metals
PPP	Public Participation Process
SADC	Southern African Development Community
SAHRIS	South African Heritage Resources Information System
SAWQG	South African Water Quality Guidelines
SDF	Spatial Development Framework
SDIs	Spatial Development Initiatives
SG	Surveyor General
SIA	Social Impact Assessment
SLP	Social and Labour Plan
SO_2	Sulphur dioxide
SO_4	Sulphate
Stats SA	Statistics South Africa
SVOCs	Semi-Volatile Organic Compounds
S&EIR	Scoping and Environmental Impact Reporting
Tharisa	Tharisa minerals (Pty) Ltd
ToRs	Terms of reference

TSF	Tailings Storage Facility
TUT	Tshwane University of Technology
TWQGR	Target Water Quality Guideline Ranges
UNISA	University of Southern Africa
VOCs	Volatile Organic Compounds
WMA	Water Management Area
WRD	Waste Rock Dump
WULA	Water Use License Application
WWRD	West Waste Rock Dump
WWTP	Waste Water Treatment Plant
Zn	Zinc

ABOUT THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

Manyabe Consultancy (Pty) Ltd (MC) is a 100% black female youth owned entity which offers sustainable development solutions to both public and private sectors, including parastatals (Mining, Waste, Energy and Industry). The company was founded in 2014 by Mpho Manyabe who is the Managing Director.

MC seeks to maintain its strategic position in the Environmental Management Services by providing service of excellence to its clients. This is achieved by providing a professional and efficient service to our clients, providing the highest possible level of customer care, upholding the highest ethical and moral principles in our actions, words and thoughts and upholding of the highest possible level of integrity.

The objective of MC is to create an environment in which enthusiastic, highly skilled and motivated professionals seek professional opinions for contribution to the environmental, social and economic development in South Africa. MC is an emerging entity which currently has turnover of less than R10 million rand and is a level 1 contributor with 135% Broad Based Black Economic Empowerment (BBBEE) procurement.

Managing Director: Mpho Manyabe

MANYABE CONSULTANCY

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Mpho Manyabe: BSc Honours in Environmental Management, UNISA, 2016; National Diploma Environmental Sciences, Tshwane University of Technology (TUT), 2008

Mpho Manyabe currently holds a BSc Honours Degree in Environmental Management. She has fourteen (14) years of work experience in the field of Environmental Management from different consulting companies.

She was previously nominated to be in the Gauteng Department of Agriculture and Rural Development (GDARD) Environmental Impact Assessment (EIA) Environmental Assessment Practitioner (EAP) committee which was launched on 31 March 2015 comprising of EAPs and GDARD officials to provide quarterly reports to the Executive Authority (Member of the Executive Committee (MEC)) on issues identified as blockages to the improved efficiencies the department seeks to achieve.

She has been nominated to become a member of the Academic Advisory Committee for the Environmental Science programme in the Department of Environmental, Water and Earth Sciences in the Faculty of Science at the TUT, to serve for a period of three (3) years, where she will be assisting with preparation and provision of relevant, high quality teaching and learning content for students. She has been identified based on her expertise in the field of Environmental Sciences/Management in order to make a positive contribution to what TUT is offering students in terms of course content and on how to better run programmes to the benefit of students.

She is the Lead EAP on the project.

Amukelani Khosa: B-Tech Degree in Environmental Sciences (2022), TUT. National Diploma in Environmental Sciences (2018), TUT

Amukelani Khosa is an Environmental Consultant at MC. She possesses a B-Tech Degree in Environmental Sciences from Tshwane University of Technology (2022). She has four (4) years of experience in the environmental management field as an EAP from different environmental consulting companies.

She has undertaken more than 14 various environmental projects (including but not limited to EIAs, WULAs, Section 24G applications and Environmental Control Officer (ECO) services.

She is the junior EAP on the project.

Please refer to Appendix 4 for the EAPs Curriculum Vitae (CV).

SECTION 1: PROJECT INTRODUCTION AND BACKGROUND

Tharisa minerals (Pty) Ltd (Tharisa) is an opencast mining operation that produces chrome and platinum group metals (PGM) concentrate. Tharisa holds existing environmental authorisations (EAs) and licenses under the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002) (MPRDA), the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended (NEMA), the National Environmental Management: Waste Act, 2008 (Act. 59 of 2008) (NEM: WA) and the National Water Act, 1998 (Act. No 36 of 1998) (NWA).

Manyabe Consultancy (MC) have been appointed by Tharisa as an independent Environmental Assessment Practitioner (EAP), to undertake a Section 102 amendment application in terms of the MPRDA in order to amend the Environmental Management Programme (EMPr); to undertake Environmental Impact Assessment (EIA) to amend an EA in terms of the NEMA; and to amend the Waste Management License (WML) in terms of the NEM: WA.

The competent authority for the above mentioned amendments is the Department of Mineral Resources and Energy (DMRE). The Department of Water and Sanitation (DWS) is the commenting authority, who would make recommendations on the applications for approval by the DMRE.

A separate Water Use License Application (WULA) process is being undertaken by Green Gold Group on behalf of Tharisa, for the various activities that will occur within the mine, *inter alia*, conversion of West Waste Rock Dump (WWRD) 1 - Extension into Tailings Storage Facility (TSF) 3 at west mine, as the activities are a listed as water uses under Section 21 of the NWA.

Tharisa mine is located on the farms Rooikopies JQ 297, Elandsdrift JQ 467 and Kafferskraal JQ 342, near the town of Marikana within the Rustenburg Local Municipality, Bojanala District Municipality, North West Province. Access to the site is via a secondary road which intersects N4 to the south of the mine (Figure 1 and Figure 2).

Tharisa holds the following EAs and licenses:

- A Mining Right (MR) (Reference No.: NW30/5/1/2/3/2/1/358) issued by the DMRE on 19 September 2008 and amended in July 2011;
- An approved EMPr (Reference No.: NW 30/5/1/2/3/2/1/358EM) issued by the DMRE on 19 September 2008;
- An EA (Ref No.: NWP/EIA/159/2007) issued by the North West Department of Economic Development, Environment, Conservation and Tourism (DEDECT) on 23 October 2009;
- An EA (Ref No.: 14/12/16/3/3/2/408) issued by the Department of Forestry, Fisheries and the Environment (DFFE) on 15 November 2012;
- An EA (Ref No.: NWP/EIA/50/2011) issued by the DEDECT on 29 April 2015;
- An addendum to the EIA and EMPr (Ref No.: NW/30/5/1/2/3/2/1/358EM) issued by the DMRE on 24 June 2015;
- An addendum to the EIA and EMPr (Ref No.: NW/30/5/1/2/3/2/1/358EM) issued by the DMRE on 14 August 2020 for the Waste Water Treatment Plant (WWTP);
- An addendum to the EIA and EMPr (Ref No.: NW/30/5/1/2/3/2/1/358EM) issued by the DMRE on 08 August 2021 for fuel and waste storage capacity increase;
- A Section 24G EA (Ref No.: NW/30/5/1/2/3/2/1/358EM) issued by the DMRE on 10 August 2021; and
- An amended Integrated Water Use Licence (IWUL) (Licence No. 03/A21K/ABCGIJ/1468) issued by the DWS in November 2020.

1-1 DETAILS AND EXPERTISE OF THE APPOINTED EAP

Below are the details of the appointed independent EAP by Tharisa. For the expertise of the EAP, please refer to Appendix 4 for CVs.

EAP Name	Tel	Email	Qualifications
Mpho Manyabe	011 863 1079	mpho@manyabeconsultancy.com	BSc Honours in Environmental Management, UNISA, 2016. National Diploma Environmental Sciences, TUT, 2008 SACNASP Registered Scientist: Reg No. 117719 EAPASA Registered EAP: Reg No. 2019/700
Amukelani Khosa	011 863 1079	amu@manyabeconsultancy.com	B-Tech Degree in Environmental Sciences, TUT, 2022. National Diploma in Environmental Sciences), TUT, 2018. SACNASP Registered Scientist: Reg No. 123106

1-2 THARISA DETAILS

Contact Person	Mr. Patrick Sibuyi
Designation	Environmental Coordinator
Email Address:	psibuyi@tharisa.com
Telephone Number:	014 572 0876
Tharisa mMne Physical Address	Portion 84, Farm 342-JQ, Marikana, 0284, South Africa

1-3 PURPOSE OF THE DRAFT SCOPING REPORT

This Draft Scoping Report has been compiled in terms of Appendix 2 of the NEMA EIA Regulations of 2014, as amended, as well as the requirements of the Scoping Report template issued by the DMRE. All comments received during the review of the Draft Scoping Report will be incorporated into the Final Scoping Report for submission to the DMRE.

A summary of the requirements of a scoping report including cross-references to sections in this report where these requirements have been addressed is provided in Table 1.

Table 1: Content of the Draft Scoping Report as per Appendix 2, Government Notice Regulation (GNR.) 982, as amended

Content of the Draft Scoping Report	Section of this Draft Scoping Report Complying to the Regulations
(a) Details of – (i) The EAP who prepared the report and (ii) The expertise of the EAP, including a CV	Section 1.1, Appendix 4; and page xv and xvi
(b) The location of the activity, including – (i) The 21-digit Surveyor General code of each cadastral land parcel (ii) Where available, the physical address and farm name (iii) Where the required information in terms of (i) and (ii) is not available, the coordinates of the boundary of the property or properties.	Section 2
(c) A plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is – (i) A linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken or (ii) On land where the property has not been defined, the coordinates within which the activity is to be undertaken	Figure 1 and 2 & Appendix 1
(d) A description of the scope of the proposed activity, including – (i) All listed and specified activities triggered (ii) A description of the activities to be undertaken, including associated structures and infrastructure.	Section 2
(e) A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process.	Section 3
(f) A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location.	Section 4
(g) A full description of the process followed to reach the proposed preferred activity, site and location of the development footprint within the site, including -	Section 6
(i) details of the alternatives considered.	Section 7
(ii) details of the PPP undertaken in terms of regulation 41 of the Regulations, including copes of the supporting documents and inputs.	Section 7 and Section 16
(iii) a summary of the issues raised by Interested and Affected Parties (I&APs), and an indication of the manner in which the issues were incorporated, or the reasons for not including them.	N/A
(iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section 8 and Section 11

Content of the Draft Scoping Report	Section of this Draft Scoping Report Complying to the Regulations
(v) the impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified impacts, including the degree to which these impacts – (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;	Section 11
(vi) the methodology used in identifying and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives;	Section 10
(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Section 11
(viii) the possible mitigation measures that could be applied and level of residual risk;	Section 12
(ix) the outcome of the selection matrix	Section 12
(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for no considering such; and	Section 6 and Section 16
(xi) a concluding statement indicating the preferred alternatives, including preferred locations of the activity;	Section 6 and Section 16
(h) a plan of study for undertaking the environmental impact assessment process to be undertaken, including –	Section 19
(i) A description of the alternatives to be considered and assessed within the preferred site	Section 15
(ii) A description of the aspects to be assessed as part of the environmental impact assessment process	Section 9 and Section 15
(iii) Aspects to be assessed by specialists	Section 9 and Section 15
(iv) A description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists	Section 9 and Section 15
(v) A description of the proposed method assessing duration significance	Section 15
(vi) An indication of the stages at which the competent authority will be consulted.	Section 15
(vii) Particulars of the PPP that will be conducted during the environmental impact assessment process	Section 16
(viii) A description of the tasks that will be undertaken as part of the environmental impact assessment process	Section 15 and Section 22; and page ix.
(ix) Identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored	Section 17
(i) An undertaking under oath or affirmation by the EAP in relation to – (i) The correctness of the information provided in the report (ii) The inclusion of comments and inputs from stakeholders, I&APs (iii) Any information provided by the EAP to I&APs and any responses by the EAP to comments or inputs made by interested or affected parties	Section 20
(j) An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and I&APs on the plan of study for undertaking the environmental impact assessment	Section 20
(k) Where applicable, any specific information required by the competent authority	Section 18
(l) Any other matter required in terms of section 24(4)(a) and (b) of the Act	Section 19

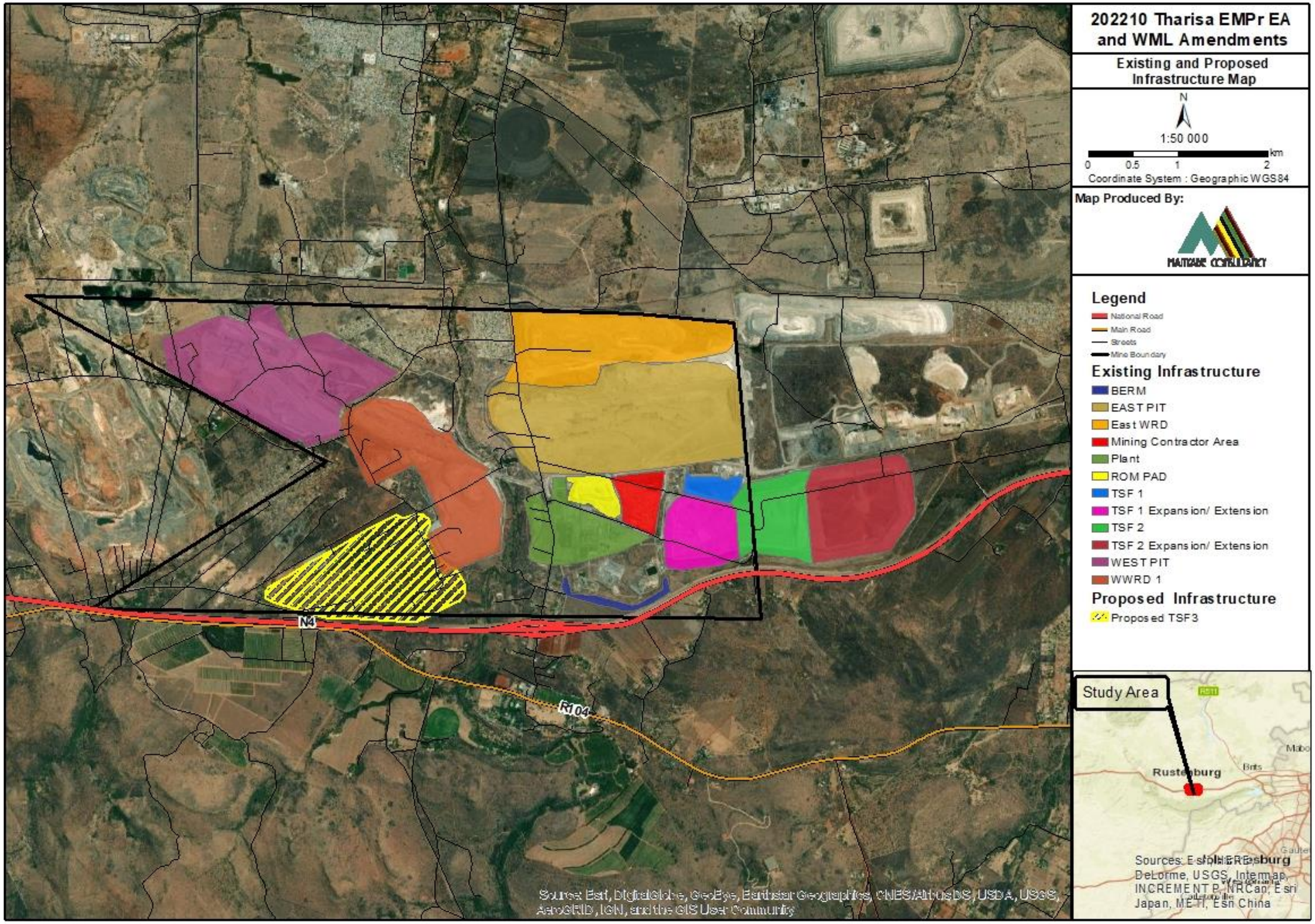

Figure 1: Locality of Tharisa mine operations (existing infrastructure) and proposed TSF3

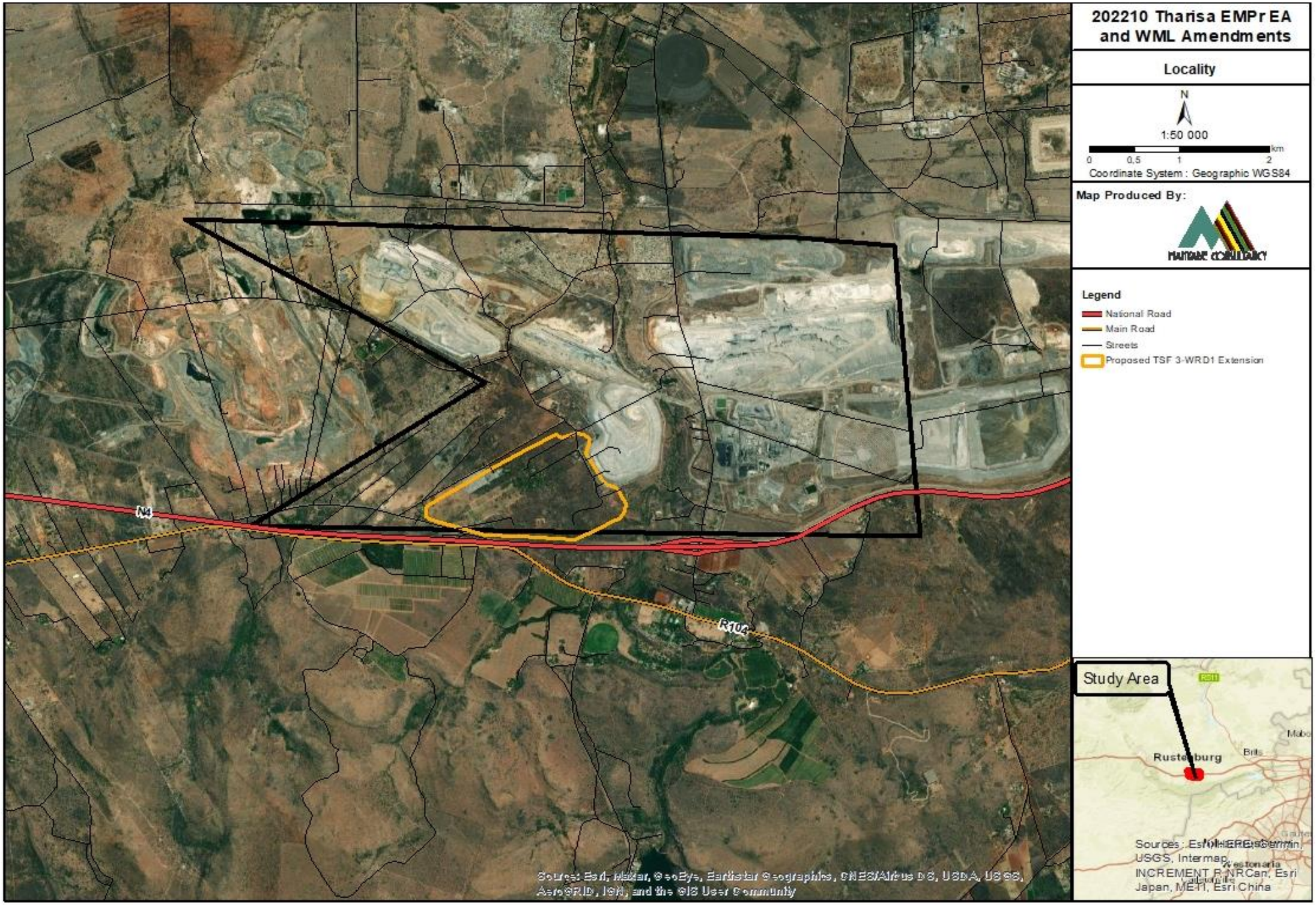

Figure 2: Locality of the proposed TSF3

SECTION 2: DESCRIPTION OF THE SCOPE OF THE ACTIVITY

2-1 DESCRIPTION OF THE PROPERTY

Farm Name (s)	The opencast mine is located on farms Rooikopies JQ 297, Elandsdrift JQ 467 and Kafferskraal JQ 342
Affected Farm (s)	The proposed TSF3 will be located on Portion 353 of Land Parcel 342 of the Major Region JQ
21 digit Surveyor General Code	T0JQ00000000034200353
Application Area (Ha)	1 171 928m^2 / 117,193 hectares
Farm Owner	Tharisa minerals (Pty) Ltd
Province	North West
District Municipality	Bojanala Platinum District Municipality
Local Municipality	Rustenburg Local Municipality
Distance and direction from nearest town (s)	Tharisa mine is located approximately 4 km to the south of Marikana Town, in the North West Province
Facility Co-ordinates	25°44'49.06"S; 27°28'31.13"E

2-2 THE PROPOSED CONVERSION OF THE WWRD1 EXTENSION INTO TSF3

Tharisa mine has been operational since 2008. Mining is undertaken in two mining sections, namely the East Mine and West Mine, using conventional open pit truck and shovel methods. Waste rock from the open pit areas is either stockpiled on WRDs or backfilled into the open pits as part of concurrent rehabilitation. The two mining sections are separated by the Sterkstroom River and Marikana Road.

The following mine infrastructure exists at the mine.

- Haul roads;
- Run-of-mine;
- Concentrator complex;
- Product and topsoil stockpiles;
- WRDs;
- Dormant and active TSFs; and
- Offices, workshops, change house and access control facilities.

As part of its on-going mine planning, Tharisa has identified the need for an additional TSF on site i.e. TSF3. Tharisa mine is growing its mining output and as such, more tailings are being produced. The current facilities are nearing their full capacity, hence the need to develop a new TSF. The conversion of a portion of WWRD 1 into TSF3 will ensure that the Life of Mine (LoM) is extended by providing alternative waste storage when the current facilities reach their end of life. The proposed conversion will occur within the approved mining footprint, which will result in minimal negative impacts on the physical environment while contributing positively to the socio-economic environment. The proposed project entails the conversion of WWRD 1 - extension into TSF3 at west mine.

This Draft Scoping Report has been compiled to fulfil the EA application process requirements relating to Mining Right NW30/5/1/2/3/2/1/358. The infrastructure and activities associated with the proposed conversion of WWRD 1 - extension into TSF3 project requires an amendment to the existing mine EA/ EMPr and a WML to authorise the following key infrastructure and project related activities:

Table 2: Design Specifications of the TSF3 to be authorised

Deposition Rate	t/m	350 000
Deposition Rate	t/annum	4 200 000
Capacity	Tonnes & m^3	21 553,85313 & 471,153
LoM	years	5.13
Footprint	m^2	1,171,928

Crest Elevation	m.a.m.s.l	1260
Full Supply Level	m.a.m.s.l	1258
Maximum Height	m	54.6
Tailings Depth	m	46.0

Before Tharisa can commence with the proposed conversion of WWRD 1 - extension into TSF3, amendments to the existing approvals need to be undertaken in terms of the following national legislation:

- The NEMA, for the listed activities stipulated in the NEMA EIA Regulations of 2014, as amended;
- The MPRDA, for the amendment of the EMPr in accordance with Section 102 of the MPRDA; and
- The NEM: WA, for waste management activities stipulated in Government Notice Regulation (GNR.) 921, promulgated under NEM: WA.

The approvals in terms of the NEMA, NEM: WA and MPRDA are being applied for to the North West DMRE.

SECTION 3: POLICY AND LEGAL CONTEXT

The purpose of this section is to list legislation, principles and policies that may relate to the management of anticipated impacts resulting from the proposed TSF3. The reason for this is to ensure that the DMRE have access to the rich picture in terms of legislation. Legislation principles and policies as listed hereunder are relatively detailed.

3-1 LEGISLATION, POLICIES AND GUIDELINES APPLICABLE TO THE PROPOSED PROJECT

Table 3 below lists the applicable legislation, policies and guidelines identified as relevant to the proposed conversion of WWRD 1 - extension into TSF3 project. In addition, a description of how the proposed activity complies with and responds to the legislation and policy context is given. This list is not exhaustive but rather presents the most applicable legislation relevant to the proposed conversion of WWRD 1 - extension into TSF3 project.

Table 3: Policy and legislative context of the proposed project

Applicable legislation and guidelines	Reference where applied	How does this development comply with and respond to the legislation and policy context	Authority
The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996) (The Constitution).	• Throughout the S&EIR.	Section 24 of the Constitution states that "*…everyone has the right (a) to an environment that is not harmful to their health or well-being; and (b) to have the environment protected, for the benefit of present and future generations through reasonable legislative and other measures that (c) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.*" This protection encompasses preventing pollution and promoting conservation and environmentally sustainable development.	Government of the Republic of South Africa.
MPRDA.	• Throughout the S&EIR.	Tharisa mine has been operational since 2008. The original EMPr was undertaken by Metago in 2008 in terms of NEMA and the MPRDA. The following approvals have been granted under the MPRDA: • A Mining Right (MR) (Reference No.: NW30/5/1/2/3/2/1/358) issued by the DMRE on 19 September 2008 and amended in July 2011; • An approved EMPr (Reference No.: NW 30/5/1/2/3/2/1/358EM) issued by the DMRE on 19 September 2008; • An addendum to the EIA and EMPr (Ref No.: NW/30/5/1/2/3/2/1/358EM) issued by the DMRE on 24 June 2015; • An addendum to the EIA and EMPr (Ref No.: NW/30/5/1/2/3/2/1/358EM) issued by the DMRE on 14 August 2020; and • An addendum to the EIA and EMPr (Ref No.: NW/30/5/1/2/3/2/1/358EM) issued by the DMRE on 08 August 2021. The proposed EA and EMPr amendments are being undertaken under the MPRDA.	North West DMRE.
NEMA and the EIA Regulations 2014, GNR 984, as amended.	• Throughout the Scoping Report; • Section 2 of this report details the proposed project description and the listed activities triggered; and • Table 4, Table 5 and Table 6 details the listed activities to be authorised according to NEMA.	Section 24 of the NEMA i.e. control of activities which may have a detrimental effect on the environment and Section 28 of the NEMA i.e. duty of care and remediation of environmental damage have been taken in consideration of. Tharisa has EAs authorised under NEMA. The following EAs have been granted under the NEMA: • An EA (Ref No.: NWP/EIA/159/2007) issued by the North West DEDECT on 23 October 2009; • An EA (Ref No.: 14/12/16/3/3/2/408) issued by the DFFE on 15 November 2012; • An EA (Ref No.: NWP/EIA/50/2011) issued by the North West DEDECT on 29 April 2015; • A Section 24G EA (Ref No.: NW/30/5/1/2/3/2/1/358EM) issued by the DMRE on 10 August 2021. The proposed conversion of WWRD 1 - extension into TSF3 project triggers activities listed in GNR. 983, 984 and 985, as amended, will require an EA from the DMRE. Activities listed in GNR 984, as emended require that a S&EIR be undertaken. **<u>Triggered activities listed under GNR.327 (Listing Notice 1) are as follows:</u>** Activities 9, 12, 19, 21D, 27 and 34. **<u>Triggered activities listed under GNR.325 (Listing Notice 2) are as follows</u>** Activities 15, 16 and 19. **<u>Triggered activity listed under GNR.324 (Listing Notice 3) is as follows</u>** Activity 19.	
DFFE Integrated Environmental Management (IEM) Guideline Series, Guideline 5: Assessment of the EIA Regulations, 2012 (Government Gazette 805). IEM Guideline Series 11, published by the DFFE in 2004. Review in EIA IEM, Information Series 13, Department of Environmental Affairs and Tourism (DEAT), Pretoria.	• Throughout the S&EIR.	Environmental impacts will be generated primarily in the construction phase of this project with associated operational phase impacts. These will be assessed as part of the proposed project. A S&EIR is required for the proposed project as activities are triggered under GNR. 983, 984 and 985.	North West DMRE.
DFFE 2017, Public Participation guideline in terms of NEMA EIA Regulations.	• Throughout the S&EIR.	PPP is a requirement of the S &EIR and is being conducted for the proposed project.	North West DMRE.
NWA.	• Throughout WULA – pertaining to water related aspects. As mentioned above, Green Gold Group have been appointed to undertake the NWA for the proposed. Project.	The conversion of WWRD 1 - extension into TSF3 project requires a Section 21 (g) WULA. A WUL (Licence No. 03/A21K/ABCGIJ/1468) was issued by the DWS to Tharisa on 16 July 2012 for the following Section 21 water uses: Section 21 a, b, c, i, g, j. An amended IWUL to the issued WUL was issued by the DWS on 12 November 2020, for the same water uses, as originally applied for.	DWS.
NEM: WA.	• Throughout the S&EIR. • Section 2 of this report details the proposed project description and the listed activities triggered; and • Table 7 details the listed activities to be authorised according to NEM: WA.	The proposed conversion of WWRD 1 - extension into TSF3 project triggers activities listed in under GNR.921 (Category B (4)) and requires that a WML from the DMRE. According to GNR. 921 of the NEM: WA, activities listed in GNR.921 (Category B) require that a S&EIR be undertaken. **<u>Triggered activities listed under GNR.921 (Category B (4)) are as follows:</u>** Activities 7 and 10.	North West DMRE, through the Integrated application process.
National Environmental Management Air Quality Act, 2004 (Act No. 39 of 2004) (NEM:AQA).	• Section 8 - baseline description.	Air quality management: Section 32 – Dust control; Section 34 – Noise control; and Section 35 – Control of offensive odours. No approvals are required from the district municipality.	DFFE.
National Forestry Act, 1998 (Act No. 84 of 1998) (NFA).	• Section 8 - baseline description.	The NFA protects against the cutting, disturbance, damage, destruction, or removal of protected trees. A Biodiversity Impact Assessment is currently being conducted as part of the S&EIR, which will identify protected trees, which may be affected by the conversion of WWRD 1 - extension into TSF3 project. Should there be any protected trees that are affected by the project, Tharisa would have to apply for the required permit for the removal and/or relocation of the trees.	Department of Agriculture, Forestry and Fisheries (DAFF).

Applicable legislation and guidelines	Reference where applied	How does this development comply with and respond to the legislation and policy context	Authority
NEM:BA.	• Section 8 - baseline description.	The NEM:BA provides for the management and conservation of South Africa's biodiversity within the framework of NEMA, as well as the protection of species and ecosystems that warrant national protection and the sustainable use of indigenous biological resources. The Act provides for listing of threatened or protected ecosystems, in one of four categories: critically endangered, endangered, vulnerable or protected. During the S&EIR process, biodiversity hotspots and bioregions will be investigated to determine the impacts that the project may have on the receiving environment. The management and control of alien invasive species on the impacted areas during all the phases of the project will be governed by the NEM:BA. The NEM:BA ensures that provision is made by the proponents to remove any alien species, which have been introduced to the site or are present on the site.	DFFE.
Mine Health Safety Act, 1996 (Act No. 29 of 1996) (MHSA).		The MHSA aims to provide for protection of the health and safety of all employees and other personnel at the mines of South Africa. The proposed project is located within a mining area and Tharisa will therefore need to ensure that employees, contractors, sub-contractors and visiting personnel, adhere to this Act and subsequent amendment regulations on site.	North West DMRE, through the Integrated application process.
Conservation of Agricultural Resources Act (Act No. 43 of 1983) (CARA).	• Section 8 - Baseline Description.	The act makes provision for the control measures for erosion; and control measures for alien and invasive plant species.	DAFF.
National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA).	• Section 8 - Baseline Description.	A HIA screener and Exemption of Palaeontological Impact Assessment is currently being undertaken for the project, to identify whether there are any areas of historical importance or of palaeontological importance.	North West Heritage Resource Authority.

3-2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998)

The NEMA provides for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by State Departments and to provide for matters connected therewith.

On 5 September 1997, the Minister of Environmental Affairs and Tourism had, under sections 26 and 28 of the Environment Conservation Act, 1989 (Act No. 73 of 1989) (ECA), and with the concurrence of the Minister of Finance, promulgated Regulations in terms of Section 21 of the Act, GNR. 1182 Government Gazette No.18261, GNR. 1183 Government Gazette No. 8261, 1184 Government Gazette 18261 (as amended).

On 21 April 2006, the Minister of the Department of Water and Environmental Affairs (DWEA, now called the DFFE and the DWS separately) promulgated Regulations in terms of Chapter 5 of the NEMA. When these Regulations came into effect on 3 July 2006, they replaced the EIA Regulations that were promulgated in terms of the ECA in 1997 and introduced new provisions for EIAs.

Subsequently, the National Environmental Management Amendment Act, 2008 (Act No. 62 of 2008) (NEMAA) was promulgated on 9 January 2009 and came into effect on 1 May 2009. The NEMAA made a number of significant amendments to the general provisions applicable to EIAs. On 18 June 2010, the Minister promulgated amended EIA Regulations in terms of Chapter 5 of NEMA. From the date of effect of these amended EIA Regulations, 2 August 2010, these amended EIA Regulations replaced the previous EIA Regulations that were promulgated on 21 April 2006.

In 2014 on 8 December, new EIA Regulations came into effect and replaced the previous EIA Regulations of 18 June 2010. The Regulations are as follows:

- GNR. 982 provides with the methodology and format which needs to be considered when conducting a Basic Assessment (BA) and S&EIR processes;
- GNR. 983 (Listing Notice 1) provides for activities which require a BA process to be followed;
- GNR. 984 (Listing Notice 2) provides for activities which require a S&EIR to be followed; and
- GNR. 985 (Listing Notice 3) also provides for activities which require a BA process to be followed.

The Minister of Environmental Affairs has again made amendments to the EIA Regulations, 2014, published under GNR. 982, GNR. 983, GNR. 984 and GNR. 985 of 4 December 2014, in terms of sections 24(5) and 44 of the NEMA through the promulgation of GNR. 324, GNR. 325, GNR. 326 and GNR. 327 of 07 April 2017.

The NEMA EIA Regulations define two broad processes for an EIA, namely: BA and S&EIR.

S&EIR is applicable to all projects likely to have significant environmental impacts due to their nature or extent, activities associated with potentially high levels of environmental degradation, or activities for which the impacts cannot be easily predicted.

BA is required for projects with less significant impacts or impacts that can easily be mitigated.

The proposed project will entail the undertaking of the EIA - S&EIR in terms of the EIA Regulations 2014, as amended; promulgated in terms of the NEMA as listed in GNR. 983, 984 and 985. These activities are identified as actions that may not commence without an EA from the relevant competent authorities, in this case, the DMRE.

3-2.1 Listed and specified activities for the proposed TSF3 project

The listed activities associated with the proposed project in respect of NEMA are provided in Table 4, Table 5 and Table 6, whereas the listed activities associated with the proposed project in respect of NEM: WA are provided in Table 7. The design of the infrastructure that will trigger these listed activities is provided in Figure 3. Based on the nature and extent of the listed activities, MC on behalf of Tharisa will conduct an integrated application process.

Table 4: Triggered activities listed under GNR.327 (Listing Notice 1)

Activity Number	Description
9	The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water— (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more; excluding where— (a) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve or railway line reserve; or (b) where such development will occur within an urban area.
Reason: Dirty water from the TSF will be recycled to the plant for use in the process. Infrastructure for the transportation of such water will need to be constructed.	
12	The development of dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs (a) within a watercourse.
Reason: The proposed construction of TSF3 to accommodate 471,153 m^3 of tailings, with footprint of 1,171,928 m^2 and a height of approximately 54.6m. The area to be developed is characterised by wetlands. A wetland delineation study is currently underway which will classify the type of wetlands found on site. The one wetland, as shown on the sensitivity map, attached in Appendix 1 falls within the footprint of the proposed TSF.	
19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse; but excluding where such infilling, depositing, dredging, excavation, removal or moving falls within the ambit of activity 21 in this Notice, in which case that activity applies.
Reason: The area to be developed is characterised by wetlands. A wetland delineation study is currently underway which will classify the type of wetlands found on site. The one wetland, as shown on the sensitivity map, attached in Appendix 1 falls within the footprint of the proposed TSF. This activity might however be excluded from the application as the proposed conversion falls within the ambit of activity 21.	
21D	Any activity including the operation of that activity which requires an amendment or variation to a right or permit in terms of section 102 of the MPRDA, as well as any other applicable activity contained in this Listing Notice or in Listing Notice 3 of 2014, required for such amendment.
Reason: The proposed project requires an amendment of the approved EMPr by way of lodging a Section 102 application.	
27	The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for - (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.
Reason: The area falls within a CBAs and ESAs. A Biodiversity Assessment is currently being undertaken on the proposed area for a Tailings facility. Terrestrial habitat, although limited, does still exist within the project area which is suitable for fauna and flora species, including some Red Data and protected species. It is anticipated that the area could potentially be characterised by sensitive indigenous vegetation. It must however be noted that the area was previously approved for a WRD. This application is for the conversion of the WWRD 1 extension into TSF3.	
34	The expansion of existing facilities or infrastructure for any process or activity where such expansion will result in the need for a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the release of emissions, effluent or pollution, excluding where the facility, infrastructure, process or activity is included in the list of waste management activities published in terms of section 19 of the NEM: WA, in which case the NEM: WA applies.
Reason: The proposed project is for the conversion of WWRD1 into TSF3, which requires an amendment to the issued IWUL. The amendment to the IWUL is currently being undertaken by Green Gold Group, in parallel with the EA, EMPr and Section 102 amendments for TSF3.	

Table 5: Triggered activities listed under GNR.325 (Listing Notice 2)

Activity Number	Description
15	The clearance of an area of 20ha or more of indigenous vegetation
Reason: The area falls within a CBAs and ESAs. A Biodiversity Assessment is currently being undertaken on the proposed area for a Tailings facility. Terrestrial habitat, although limited, does still exist within the project area which is suitable for fauna and flora species, including some Red Data and protected species. It is anticipated that the area could potentially be characterised by sensitive	

indigenous vegetation. It must however be noted that the area was previously approved for a WRD. This application is for the conversion of the WWRD 1 extension into TSF3. The total footprint of the proposed TSF3 is 117,1928 hectares.	
16	The development of a dam where the highest part of the dam wall, as measured from the outside toe of the wall to the highest part of the wall, is 5 metres or higher or where the highwater mark of the dam covers an area of 10 hectares or more.
Reason: The proposed conversion of WWRD 1 extension into TSF3 to accommodate 471,153 m^3 of tailings, with footprint of 1,171,928 m^2 and a height of approx. 54.6m.	
19	The removal and disposal of minerals contemplated in terms of section 20 of the MPRDA, including (a) associated infrastructure, structures and earthworks, directly related to prospecting of a mineral resource; or (b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing; but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in this Notice applies.
Reason: The proposed conversion of WWRD 1 extension into TSF3 to accommodate 471,153 m^3 of tailings, with footprint of 1,171,928 m^2 and a height of approx. 54.6m.	

Table 6: Triggered activity listed under GNR.324 (Listing Notice 3)

Activity Number	Description
19	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. North West: World Heritage Sites; core of biosphere reserve; or sites or area identified in terms of an international convention; A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation; All Heritage Sites proclaimed in terms of NHRA; Critical Biodiversity Areas (CBAs) as identified in systematic biodiversity plans adopted by the competent authority; Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.
Reason: The area falls within a CBAs and Ecological Support Areas (ESAs). A Biodiversity Assessment is currently being undertaken on the proposed area for a Tailings facility. Terrestrial habitat, although limited, does still exist within the project area which is suitable for fauna and flora species, including some Red Data and protected species. It is anticipated that the area could potentially be characterised by sensitive indigenous vegetation. It must however be noted that the area was previously approved for a WRD. This application is for the conversion of the WWRD 1 extension into TSF3. The total footprint of the proposed TSF3 is 117,1928 hectares.	

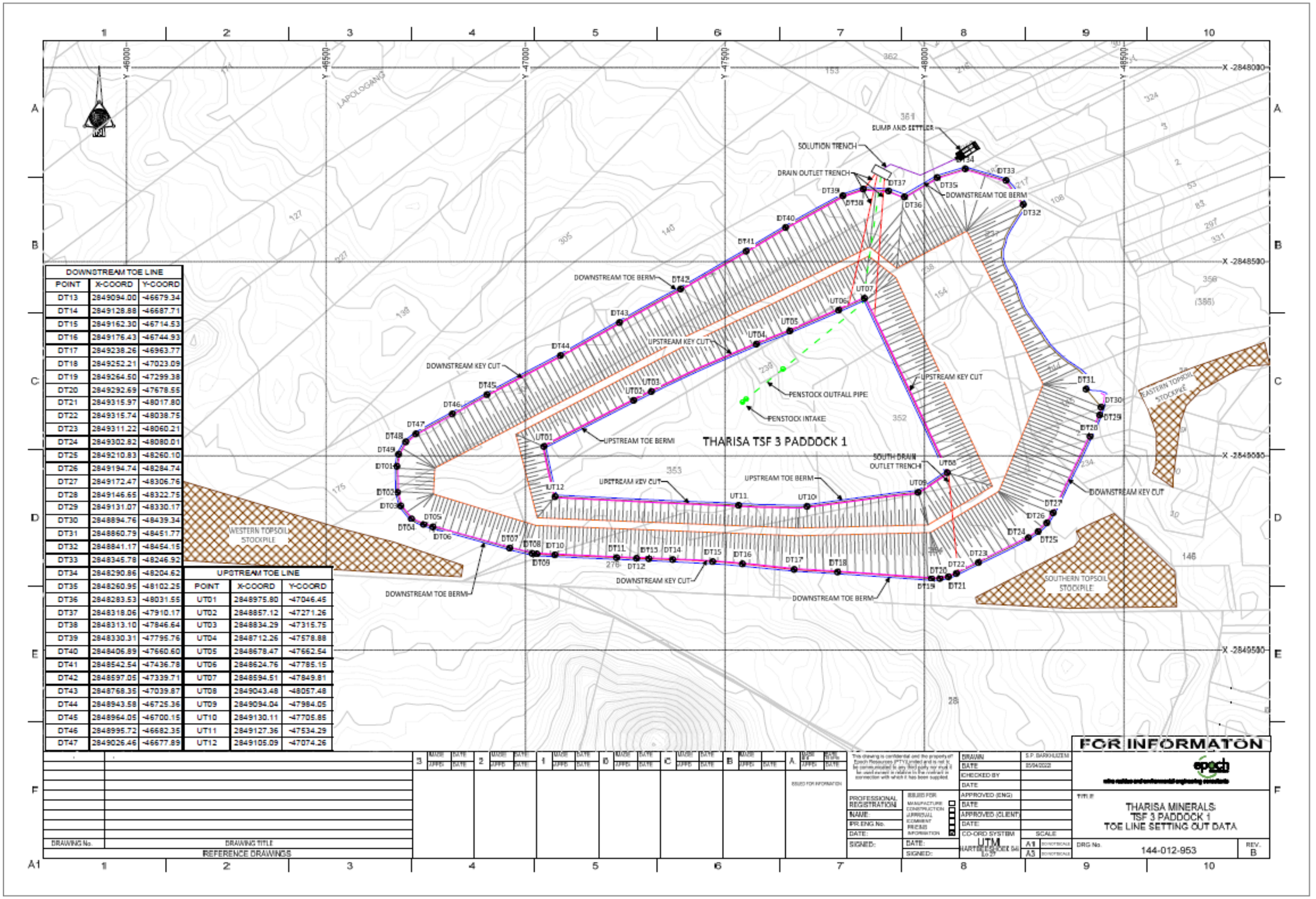

Figure 3: Proposed TSF3 Design

3-3 MINERALS & PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (ACT NO. 28 OF 2002)

In terms of Section 102 of the MPRDA, the application procedure to be followed concerning the EMPr amendment is a S&EIR process. Section 102 of the Act states that "*a reconnaissance permission, prospecting right, mining right, mining permit, retention permit, technical corporation permit, reconnaissance permit, exploration right and production right work programme; mining work programme, EMPr, and Environmental Management Plan (EMP) may not be amended or varied (including by extension of the area covered by it or by the addition of minerals or a share or shares or seams, mineralised bodies, or strata, which are not at the time the subject thereof) without the written consent of the Minister*".

It must be noted that Activity 21D has been included into Listing Notice 1 on the NEMA EIA Regulations, of 2014, as amended, which now requires that a **BA** must be undertaken as part of a Mining Right amendment process in terms of section 102 of the MPRDA. Due to the NEMA and NEM: WA listed activities, which require a S&EIR process to be followed, Section 102 amendment will also follow the S&EIR process.

3-3.1 Regulations regarding the planning and management of residue stockpiles and residue deposits from a prospecting, mining, exploration, or production operation (GN 632 of 2015), as amended.

The purpose of these Regulations is to regulate the planning and management of residue stockpiles and residue deposits from a prospecting, mining, exploration, or production operation. The identification and assessment of environmental impacts arising from the establishment of residue stockpiles and residue deposits must be done as part of the EIA conducted in terms of the NEMA. A risk analysis based on the characteristics and the classification must be used to determine the appropriate mitigation and management measures. The design of the TSF will need to meet the requirements of GNR. 632 of 2015. The detailed design reports will be provided as part of the Impact Assessment Phase.

3-4 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT, 2008 (ACT 59 OF 2008)

The Acting Minister of the DFFE under section 19 (1) of the NEM: WA, has published a List of Waste Management Activities which have, or are likely to have a detrimental effect on the environment in GNR. 921 of 29 November 2013.

The schedule has listed activities in three different categories, i.e. Category "A", Category "B" and Category "C".

For **Category "A"** activities, a person who wishes to commence, undertake or conduct an activity listed under this Category, must conduct a BA process, as stipulated in the NEMA EIA Regulations under section 24 (5) of the NEMA as part of a waste license application.

For **Category "B"** activities, a person who wishes to commence, undertake or conduct an activity listed under this Category, must conduct a NEMA S&EIR process, as stipulated in the EIA regulations under section 24(5) of the NEMA as part of a waste license application.

For **Category "C",** a person who wishes to commence, undertake or conduct a waste management activity must comply with relevant requirements or standards determined by the Minister listed below:

a) Norms and Standards for Storage of Waste, 2013;
b) Standards for Extraction, Flaring or Recovery of Landfill Gas, 2013; or

c) Standards for Scrapping or Recovery of Motor Vehicles, 2013.

The following definitions have been provided:

"Residue stockpiles" are defined in the MPRDA as "any debris, discard, tailings, slimes, screening, slurry, waste rock, foundry sand, beneficiation plant waste, ash or any other product derived from or incidental to a mining operation and which is stockpiled, stored or accumulated for potential re-use, or which is disposed of, by the holder of a mining right, mining permit or production right."

"Residue deposit" is any residue stockpile that remains at the termination of a mining or prospecting activity.

Since 2 September 2014, a WML must be obtained for the establishment of new residue stockpiles and deposits resulting from activities requiring a right/ permit in terms of the MPRDA.

Since 24 July 2015, a WML must be obtained for the establishment, reclamation, expansion or decommissioning of residue stockpiles or residue deposits resulting from activities requiring a right/ permit in terms of the MPRDA. Existing residue stockpiles and deposits can be managed in terms of an approved EMPr.

The Minister of Environmental Affairs published the amendment regulations regarding the Planning and Management of Residue Stockpiles and Residue Deposits on 21 September 2018. The purpose of the amendment regulations is to amend the regulations regarding the Planning and Management of Residue Stockpiles and Residue Deposits of 2015, with the main aim to allow for the pollution control measures required for residue stockpiles and residue deposits, to be determined on a case-by-case basis, based on a risk analysis conducted by a competent person.

In terms of the transitional arrangements, any application for a WML relating to the establishment of a residue stockpile or residue deposit, lodged before 21 September 2018, must be dealt with in terms of the Regulations as amended by these amendment regulations.

The regulations regulate the assessment of impacts and analyses of risks relating to the management of residue stockpiles and residue deposits, the characterisation of residue stockpiles and residue deposits, the classification of residue stockpiles and residue deposits, the investigation and selection of site for residue stockpiling, the design of the residue stockpiles and residue deposits, impact management, the duties of the holder of right or permit, the monitoring and reporting system for residue stockpiles and residue deposits, dust management and control, decommissioning, closure and post closure management of residue stockpiles and residue deposits.

The listed activities associated with the proposed project in respect of NEM: WA are provided in

Table 7: Triggered activities listed under GNR.921 (Category B (4))

Activity Number	Description
Activity 7	The disposal of any quantity of hazardous waste to land.
Reason: The tailings may be considered hazardous material.	
Activity 10	The construction of a facility for a waste management activity listed in Category B of this Schedule (not in isolation to associated waste management activity).
Reason: TSF3 will be constructed for the disposal of tailings.	

3-5 MUNICIPAL PLANS AND CORPORATE POLICIES

3-5.1 North West Spatial Development Framework

North West Spatial Development Framework (SDF) needs to be conducive for sustainable development and provides for the execution of the following objectives:

i. The alignment of international agreements, protocols and policies on sustainable development as determined by Agenda 21;

ii. The integration of international cooperation and development programmes which includes the Spatial Development Initiatives (SDIs) involving the Coast to Coast Development Corridor;

iii. Giving spatial effect to objectives set by National Government Policies on Sustainability to support the optimal integration of the aspects of social, economic, institutional, political, physical and engineering services. The objectives include:

a. The National Development Plan 2030 which promotes an economy that will create more jobs, improving Infrastructure, transition to low carbon economy, an inclusive and integrated rural economy, reversing the spatial effects of apartheid ,improving the quality of education, training and innovation, quality health for all, social, protection, building safer communities and reforming the public sector.

b. The National Strategy for Sustainable Development (NSSD) promoting the integration between social demands, natural resource protection, sustainable use and economic development.

c. The Comprehensive Rural Development Programme (CRDP) integrating broad-based agrarian transformation, strategically increasing rural development and land reform programme aiming at tenure reform, restitution and land redistribution.

iv. Restructuring and eliminating the disparate spatial development patterns provided by apartheid planning.

v. Creating an enabling environment for sustainable employment and economic growth and infrastructure development, promoting the objectives of the National Growth Path, The Industrial Policy Action Plan (IPAP) and The National Infrastructure Plan.

vi. Providing for the integration of the objectives of sustainable housing.

vii. Reducing inherited spatial divisions and distorted spatial patterns through spatial restructuring tenure reform, restitution and land redistribution.

viii. Addressing the inequality in the spatial distribution of economic activities and population in the province.

ix. Maintaining and developing national and regional roads, railway and airport linkages promoting national, regional and provincial accessibility support the development of Transportation Corridors. These corridors include systems of.

x. The optimal utilisation of natural resources by the objectives of:

a) Protecting biodiversity from the development of mines, forestry, urban and rural development, agriculture set by the North West Biodiversity Sector Plan.

b) Enhancing the quantity and protecting the quality of water resources.

c) Utlising the mineral resources in a responsible way attending to the effect of it on the environment.

d) Protecting and high and unique potential agriculture land and the reduction of available land due to the development of mines, urban and rural areas and forestry.

Five strategic objectives have been identified to provide foundation for spatial development strategies in North West. These objectives are outlined below:

- **Strategic Objective 1**: Focus development on regional spatial development initiatives, development corridors, development zones and nodes.
- **Strategic Objective 2**: Protect biodiversity, water and agricultural resources.

- **Strategic Objective 3**: Promote Infrastructure Investment.
- **Strategic Objective 4**: Support economic development and job creation guiding the spatial development pattern of North West.
- **Strategic Objective 5**: Balance urbanisation and the development of rural areas within North West.

To achieve high growth scenarios and strategic objectives above, seven development mechanisms were identified. These include land use planning and management, settlement planning, economic development, infrastructure investment, human resources development, facilitative governance and industrialisation. These mechanisms will ensure that the province enjoys high growth by shifting from social needs-based policy to infrastructure and economic growth-based policies.

3-5.2 Bojanala Platinum District Municipality Integrated Development Plan (2017- 2022)

Bojanala Platinum District Municipality is one of the four district municipalities in the North West Province. Bojanala Platinum District Municipality is situated on the eastern part of the North West province, and it shares provincial boundaries with Limpopo, Mpumalanga and Gauteng Provinces and a national boundary with Botswana in the northern side. Its geographic size is covers 18 333km², with a population of 1 657 148 (2016, Statistics SA) and this makes it the most populous of the four districts of the North West Province.

The main economic drivers of the district municipality are agriculture, tourism, manufacturing, mining and the service industry. Bojanala Platinum District Municipality is located along the Merensky Reef, which account for the district municipality being the leader in the production of PGMs. As a result mining is the biggest employer in the district. The tourism industry also plays a major role in the economy of the district due to the number of world class public and private game parks. Sun City in Moses Kotane is also one of the region's tourist attractions.

The N4 freeway also play a role in linking the district with major economic centres in Gauteng Province. Furthermore, The N4 freeway that traverses the boundaries of three local municipalities in Bojanala Platinum District Municipality is unique as it spans the central section of the only coast-to-coast corridor in Africa. The east-west corridor runs from Maputo in the east to Walvis Bay, Namibia in the west and connects the capital cities of four countries of the Southern African Development Community (SADC), namely Maputo in Mozambique, Pretoria in South Africa, Gaborone in Botswana and Windhoek in Namibia.

A number of challenges affecting the local economic development key performance area in the district were identified as follows:

- Lack/poor of tourism infrastructure development.
- Driving and visibility in major tourism activities within the district e.g Miss SA.
- Not proactive measures to initiate activities that could attract or promote tourism.
- Poor Integrated tourism information management system.
- Widening gap between commercial and emerging farmers.
- Not transferring assets to the local municipality/traditional authority for purpose of maintenance and operation.
- Lack of support for farmers to do game farming.
- Poor tenure development support.
- Poor coordinate, monitoring and implementation of Social and Labour Plans (SLPs).
- No mineral beneficiation for enterprises.
- Lack of coordination job creation stats by private sector e.g. Mines, Retails, manufacturing, etc.

3-5.3 Rustenburg Local Municipality Integrated Development Plan (2017- 2022)

The Rustenburg Local Municipality is a category B municipal council consisting of 45 wards. It occupies the central part of the Bojanala Platinum District Municipality and houses the main offices of the district municipality. The major settlements of Rustenburg Local Municipality are the Rustenburg town, Phokeng, Tlhabane, Hartebeesfontein and Marikana.

The N4 freeway passes through the town of Rustenburg and also links the municipality with the main centres of Johannesburg and Tshwane metros. Rustenburg is home to large mining operations by companies such as Anglo Platinum, Impala Platinum, Xstrata and Lonmin. Approximately 97% of the total platinum production occurs in Rustenburg, with the mining sector providing more than 50% of all formal employment.

The Rustenburg Local Municipality's IDP identifies strategic focus areas it has identified as the cornerstones of a successful and thriving council within the developed Master Plan 2040, and which form the foundation of its Five-year Integrated Development Plan (IDP). The approved master plan has 5 goals which reads as follows:

- City of vibrant and diversified economy;
- City of identity;
- City of smart liveable homes;
- City of excellence in Education and sport; and
- City of sustainable resources management.

The IDP identifies agriculture, mining, manufacturing, utilities, trade, transport, finance, community and personal services, general government services and tourism as sectors that contributes to local economic development. Of relevance to the project is opportunities identified in terms of recycling and rehabilitations of mines which could contribute to the local economic development.

3-6 OTHER ENVIRONMENTAL PLANNING AND MANAGEMENT GUIDELINES

A number of planning and management guidelines have been developed that need to be considered as part of the S&EIR process, including:

- DWS, 2010. Operational Guideline: Integrated Water and Waste Management Plan (IWWMP). Resource Protection and Waste;
- Department of Water Affairs and Forestry (DWAF), 2007. Best Practice Guideline A2: Water Management for Mine Residue Deposits;
- DWAF, 2007. Best Practice Guideline A4: Pollution control dams;
- DWAF, 2008. Best Practice Guideline A6: Water Management for Underground Mines;
- DWAF, 2006. Best Practice Guideline G1 Storm Water Management;
- DWAF, 2006. Best Practice Guideline G2: Water and Salt Balances;
- DWAF, 2006. Best Practice Guideline G3. Water Monitoring Systems;
- DWAF, 2008. Best Practice Guideline G4: Impact Prediction;
- DWAF, 2008. Best Practice Guideline H1: Integrated Mine Water Management;
- DWAF, 2006. Best Practice Guideline H3: Water Reuse and Reclamation;
- DEAT. 2002. IEM, Information series 2: Scoping. DEAT. 2002;
- DEAT. 2002. IEM, Information series 3: Stakeholder Engagement. DEAT. 2002;
- DEAT. 2002. IEM, Information series 4: Specialist Studies. DEAT. 2002;
- DEAT. 2002. IEM, Information series 12: EMPrs. DEAT. 2002;
- DFFE. 2012. Companion to the EIA Regulations 2010, IEM Guideline Series 7, DEA; and
- DFFE. 2017. Guideline on Need and Desirability, DEA, Pretoria, South Africa.

SECTION 4: NEED AND DESIRABILITY OF THE ACTIVITY

Tharisa mine is growing its mining output and as such, more tailings are being produced. The current facilities are nearing their full capacity, hence the need to develop new facilities. The additional TSF will ensure the LoM is extended by providing alternative waste storage when the current facilities reach their end of life. The proposed new TSF will occur within the approved mining footprint, which will result in minimal negative impacts on the physical environmental while contributing positively to the socio-economic environment.

The mineral extraction at Tharisa is considered by the company to be in the best interest of the public at large as it will generate earning power both locally and internationally. The chrome and PMG concentrate is sold overseas. In addition, the mine also has a positive impact on the economic growth of the North West Province, particularly in the communities around the mine and through its rates and taxes to the National fiscus.

Tharisa is considered to have a positive socio-economic benefit through employment of locals. Unskilled and semi-skilled labour is sourced mainly from the local communities and surrounding areas. Mining is one of the major employers within the area, and many mining companies in close proximity to the Tharisa mine i.e. Western Platinum, Marikana Platinum and Samancor mines, exist. If the proposed conversion of WWRD 1 - extension into TSF3 project is authorised and implemented, it will extend the life of the operation, which will lead to direct and indirect benefits to society and the surrounding communities. Direct economic benefits may be derived from retaining and creating new employment opportunities, wages, taxes and profit. Indirect economic benefits may be associated with the procurement of goods and services.

SECTION 5: PERIOD FOR WHICH EA IS REQUIRED

It is envisaged that the construction of the infrastructure associated with the proposed conversion of WWRD 1 - extension into TSF3 project will take approximately 2 to 3 years i.e. January 2023 - 2025, with the expected operational, closure and post-closure timeframes associated with these project phases being in line with Tharisa's current Mining Right i.e. 2039. Tharisa have an existing Mining Right which was granted on 19 September 2008 and was amended in July 2011. The Mining Right is valid for 30 years from the date of issuance. The Mining Right will be invalid from 19 September 2038.

SECTION 6: DESCRIPTION OF THE ALTERNATIVES CONSIDERED

In terms of the NEMA EIA Regulations 2014, as amended, all environmental reports must contain a description of any feasible and reasonable alternatives that have been identified, including a description and comparative assessment of the advantages and disadvantages that the proposed activity and alternatives will have on the environment and on the community, that may be affected by the activity. Every S&EIR process must therefore identify and investigate alternatives, with feasible and reasonable alternatives to be comparatively assessed. If no alternatives exist, proof that an investigation was undertaken and motivation indicating that no reasonable or feasible alternatives other than the proposal/ preferred option and the no-go option exist.

6-1 DESIGN ALTERNATIVES:

At least two (2) options are being considered i.e. no barrier option and the base preparation/ barrier option. MC as the appointed EAP understands that both options have associated risk impacts, and therefore mitigation measures will be prescribed during the Impact Assessment phase. The designs will then be tested further. MC will give evidence that either design would be the Best Practicable Environmental Option (BPEO) from the environmental and socio-economic perspective, and that all risks will be appropriately managed. The risk assessment will enable an evaluation of the effectiveness of either alternative.

6-2 SITE ALTERNATIVES:

Tharisa Mining Right boundary has significant space constraints due to the existing infrastructure. Tharisa mine is also bordered by other mining companies (Western Platinum, Marikana Platinum and Samancor mines) on the West, North and Eastern boundaries of the Tharisa Mining Right area. The N4 and farming community of Buffelspoort is located to the South of the Tharisa mine. The addition of TSFs is dictated by the space available within the mining right area. To minimise the extent of the project disturbance, portions of the project footprint will be located on previously disturbed areas. No location alternatives for the proposed project could be considered. Given that the project components relate mainly to storage of waste material in order for mining to effectively take place and optimising approved mining activities, no real site alternatives exist for the project.

SECTION 7: DETAILS OF THE PUBLIC PARTICIPATION PROCESS FOLLOWED

PPP process is being undertaken in terms of regulation 41 of the EIA 2014 Regulations, as amended, for the proposed project triggering listed activities under the NEMA, MPRDA and NEM: WA. MC on behalf of Tharisa took into account all relevant guidelines applicable to public participation as contemplated in section 24J of the NEMA. Notices have been given to all potential I&APs to participate in the project. MC are giving notices to all I&APs of the applications which are being subjected to PPP by undertaking the following:

7-1 LEGAL REQUIREMENTS OF THE PPP AS REQUIRED BY SECTION 41 OF THE NEMA

41 (1) This regulation only applies in instances where adherence to the provisions of this regulation is specifically required.

(2) The person conducting a PPP must take into account any relevant guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential I&APs of an application or the proposed application which is subjected to public participation by:

(a) fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of (i) the site where the activity to which the application or proposed application relates is or is to be undertaken; and (ii) any alternative site;

(b) giving written notice, in any of the manners provided for in section 47D of the Act, to (i) the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken; (ii) owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken; (iii) the municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area; (iv) the municipality which has jurisdiction in the area; (v) any organ of state having jurisdiction in respect of any aspect of the activity; and (vi) any other party as required by the competent authority;

(c) placing an advertisement in (i) one local newspaper; or (ii) any official that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations;

(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district

municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official referred to in paragraph (c)(ii); and

(e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to (i) illiteracy; (ii) disability; or (iii) any other disadvantage.

(3) A notice, notice board or advertisement referred to in subregulation (2) must (a) give details of the application or proposed application which is subjected to public participation; and (b) state (i) whether a BA or S&EIR procedures are being applied to the application; (ii) the nature and location of the activity to which the application relates; (iii) where further information on the application or proposed application can be obtained; and (iv) the manner in which and the person to whom representations in respect of the application or proposed application may be made.

(4) A notice board referred to in subregulation (2) must (a) be of a size of at least 60cm by 42cm; and (b) display the required information in lettering and in a format as may be determined by the competent authority.

7-2 ANNOUNCEMENT OF THE PROJECT AND THE DRAFT SCOPING REPORT AVAILABILITY

The objectives of PPP during the scoping phase are to provide sufficient and accessible information to I&APs in an objective manner to enable them to raise comments, issues of concern and suggestions for enhanced benefits. I&APs will also have an opportunity to provide input into the terms of reference (ToRs) for the specialist studies, and to contribute relevant local and traditional knowledge to the S&EIR process.

The project is being announced to the public from **Friday, 12 August 2022**, by means of the placement of a newspaper advertisement and site notices. BIDs have been distributed to I&APs to create awareness of the proposed project. MC have announced the availability of the Draft Scoping Report. The report is being subjected to a PPP of at least 30 days and the Final Scoping Report will reflect the incorporation of comments received, including any comments from the competent and commenting authorities.

The following processes are being undertaken to announce the project and the Draft Scoping Report:

- An I&AP database has been opened and is being maintained, and includes all potential I&APs in respect of the application in accordance with Regulation 42.
- Letters are being sent to all I&APs, written in any of the manners provided for in section 47D of the NEMA, announcing the project and the availability of the Draft Scoping Report, containing project information and a locality map to the municipal councillor of the ward in which the site is situated and any organisation of ratepayers that represent the community in the area, the municipality which has jurisdiction in the area, any organ of state having jurisdiction in respect of any aspect of the activity; and any other party as required by the competent authority.
- Affected parties who cannot be reached via mail, fax or e-mail of the proposed project, are being visited for delivery of the letters. The letters have attached sheets which allow I&APs to register and/ or /comment.
- Four (4) site notice boards have been fixed at a place conspicuous to and accessible by the public at the boundary of the site where the activity to which the application relates to.
- One (1) advertisement has been placed in the Rustenburg Herald Local newspaper.
- The Draft Scoping Report has also been made available on the MC website (https://manyabeconsultancy.com/stakeholder-engagement/); and at the Marikana Public Library.

Subsequent to the 30 days' period, all comments and representations received from I&APs will be considered and recorded in the Comments and Responses Report (CRR). All I&APs who would have participated in the PPP will be thanked, and their comments acknowledged.

The Draft Scoping Report is available for public comment from **Friday, 12 August 2022** to **Tuesday, 13 September 2022**.

7-3 ANNOUNCEMENT OF DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT AVAILABILITY

The objectives of public participation during the Impact Assessment phase are to verify that I&APs issues have been considered in the Impact Assessment, and to comment on the findings of the S&EIR, including the potential negative and positive impacts and the proposed management measures.

MC will compile and announce the availability of Draft Environmental Impact Assessment Report (EIR), which will include an EMPr. The report will be subjected to PPP of at least 30 days and will reflect the incorporation of comments received, including any comments of the competent and commenting authorities.

The following processes will be undertaken to announce the Draft EIR:

- Letters will be sent to all I&APs, written in any of the manners provided for in section 47D of the NEMA, announcing the availability of the Draft EIR to the municipal councillor of the ward in which the site is situated and any organisation of ratepayers that represent the community in the area, the municipality which has jurisdiction in the area, any organ of state having jurisdiction in respect of any aspect of the activity; and any other party as required by the competent authority.
- Subsequent to the 30 days' period, all comments and representations received from I&APs will be considered and recorded in the CRR. All I&APs who would have participated in the PPP will be thanked, and their comments acknowledged.

7-4 ANNOUNCEMENT OF THE DECISION

MC will ensure that all registered I&APs are provided with access to the decision and the reasons for such decision. I&APs will be drawn to the fact that appeals may be lodged against the decision in terms of the National Appeals Regulations of 2014 (GNR. 993), if such appeals are available in the circumstances of the decision. The decision will be advertised through the following methods:

- Personalised letters to individuals and organisations on the stakeholder database; and
- Placement of a newspaper advert in the same local newspaper where the project and the availability of the Draft Scoping Report was announced.

SECTION 8: SPECIFIC BASELINE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE SITE

An overview of the baseline biophysical and socio-economic environment of the proposed conversion of WWRD 1 - extension into TSF3 project is given below. This information was obtained from the existing data presented in the approved environmental reports and specialist studies reports which were undertaken previously, for similar activities at the Tharisa mine. The data will be updated based on the specialist studies which are currently being undertaken for the proposed project. The infrastructure and associated activities to be developed as part of the proposed project will be established in greenfield area within the current Tharisa mining right property. The infrastructure and associated activities have been presented in Section 2. Sensitive environmental and socio-economic features associated with the proposed project will be confirmed during the specialist studies which are currently being undertaken as part of this S&EIR process.

8-1 GEOLOGY

8-1.1 Regional Geology

In general, Tharisa mine and the surrounding area are underlain by igneous rocks of the Rustenburg Layered Suite (RLS), which forms part of the Bushveld Igneous Complex (BIC) and is approximately 2 050 million years old. The RLS layered sequence is generally planar in nature and gently folds around a thickened part of floor rocks known as the Magaliesberg Quartzite Formation (MQF). The general stratification of the RLS, BIC is illustrated in Figure 4. The Magaliesberg Mountain Range is formed by quartzites (Transvaal Sequence), which are common as floor or basement rocks to the BIC. All the chromitite and platinum mineralisation is in the RLS. These layered rocks have a maximum thickness of up to about 8 km consisting of pyroxenite, norite, gabbro and other mafic to ultramafic lithogens.

The RLS comprises five stratigraphic zones representing the sequential fractional crystallisation that accompanied the cooling of this magmatic body:

- The Marginal Zone, which comprises pyroxenites and norites with no economic potential;
- The Lower Zone which comprises ultramafic rocks, such as pyroxenites and harzburgites, containing thin, high-grade chromitite seams;
- The Critical Zone pyroxenites, norites and anorthosites that host all the significant platinum group metals chromite deposits;
- The Main Zone, which consists mainly of homogeneous norites and gabbros that are locally exploited as dimension stone; and
- The Upper Zone norites, gabbros and diorites, which host over 20 massive magnetite seams, some of which are exploited for vanadium and iron ore.

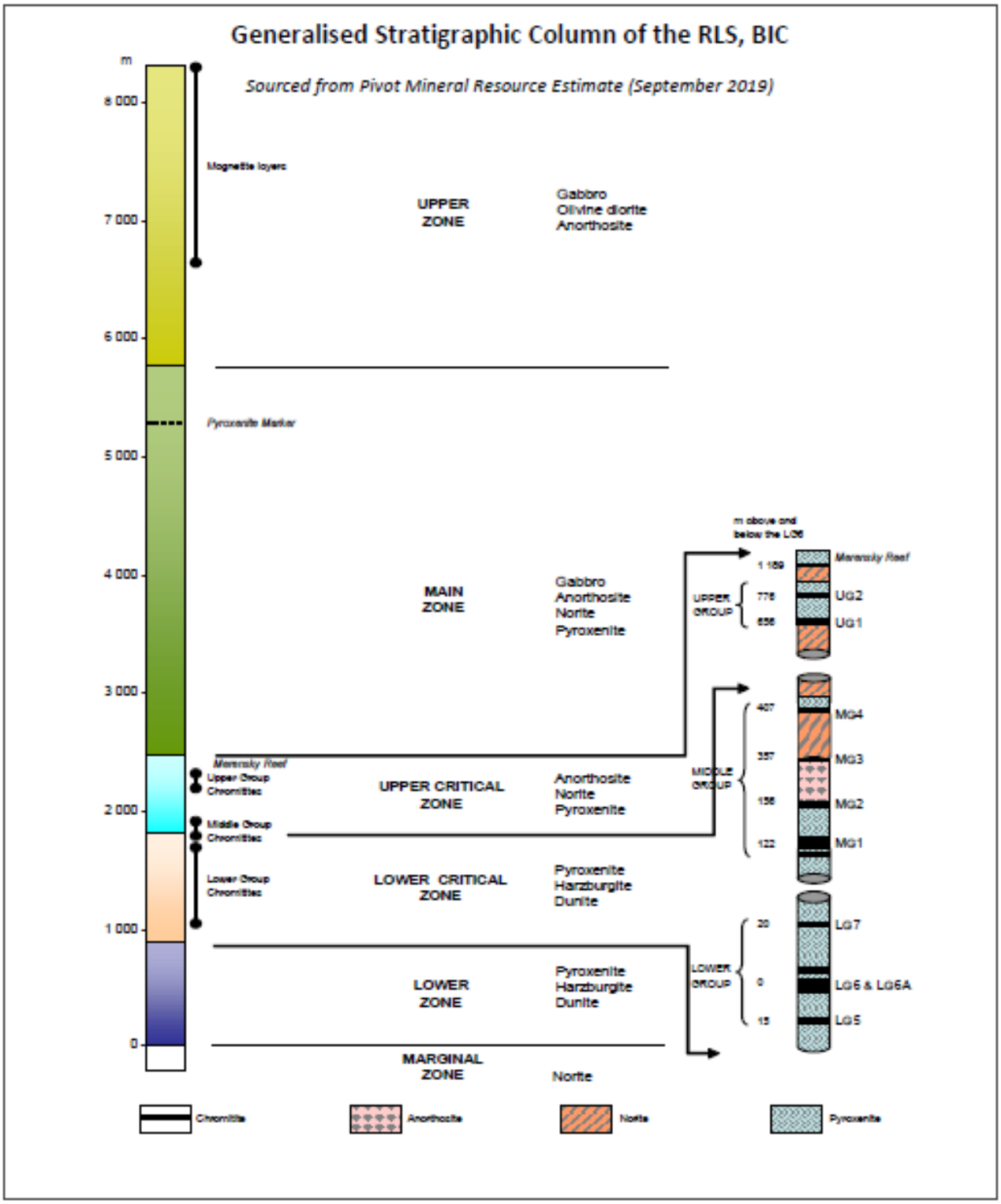

Figure 4: Stratigraphy of the regional geology

8-1.2 Local Geology

Tharisa mine is located on the south western limb of the BIC in the Marikana section. The Marikana section is separated from the Brits section to the east by the Wolhulterskop fault and the Rustenburg section to the west by the Spruitfontein upfold (see Figure 5). The target ore body is the Middle Group (MG) Chromitite Layers (MG1 –MG4). The MG Chromitite Layers outcrop on the farm 342 JQ striking roughly east - west and dipping at 12-15° to the north. Towards the western extent of the outcrop, the stratigraphy typically narrows, and the dip is steeper, with a gentle change in strike to north west- south-east. The entire MG package is

developed over a true thickness of 47 m on the eastern portion of 342 JQ and thins to 25m to the west near the Spruitfontein upfold.

The MG package has four main groups of chromitite layers hosted in anorthosite, norite and feldspathic pyroxenite. These chromitite layers are important as they contain significant concentrations of chromite and PGMs. Of the four main chromite layers (seams), the MG1 has the highest chrome content. It is common for the MG1 to be divided into more than one band. Shearing in the MG1 is also common but the location varies. The MG2s have three subdivisions, with the MG2A, MG2B and MG2C identifiable from the base upwards. MG2A and MG2B usually occur as one layer but are distinguishable by their definite analytical signature. Of the three subdivisions, MG2C contains the highest content of PGMs followed slightly by MG2A. MG2B has a much lower content in comparison. The MG2s are hosted in a felspathic pyroxenite but directly underlay the anorthositic marker. The anorthositic marker is a prominent anorthosite and often a norite separating the MG2s and the overlying MG3. Chrome stringers are sometimes present within the marker and can be high in PGM content. The MG3 appears as a banded layer of chrome stringers and bands within norite and anorthosite. The MG4s are subdivided into the MG4(0) at the base, MG4 and MG4A at the top (refer to Figure 5).

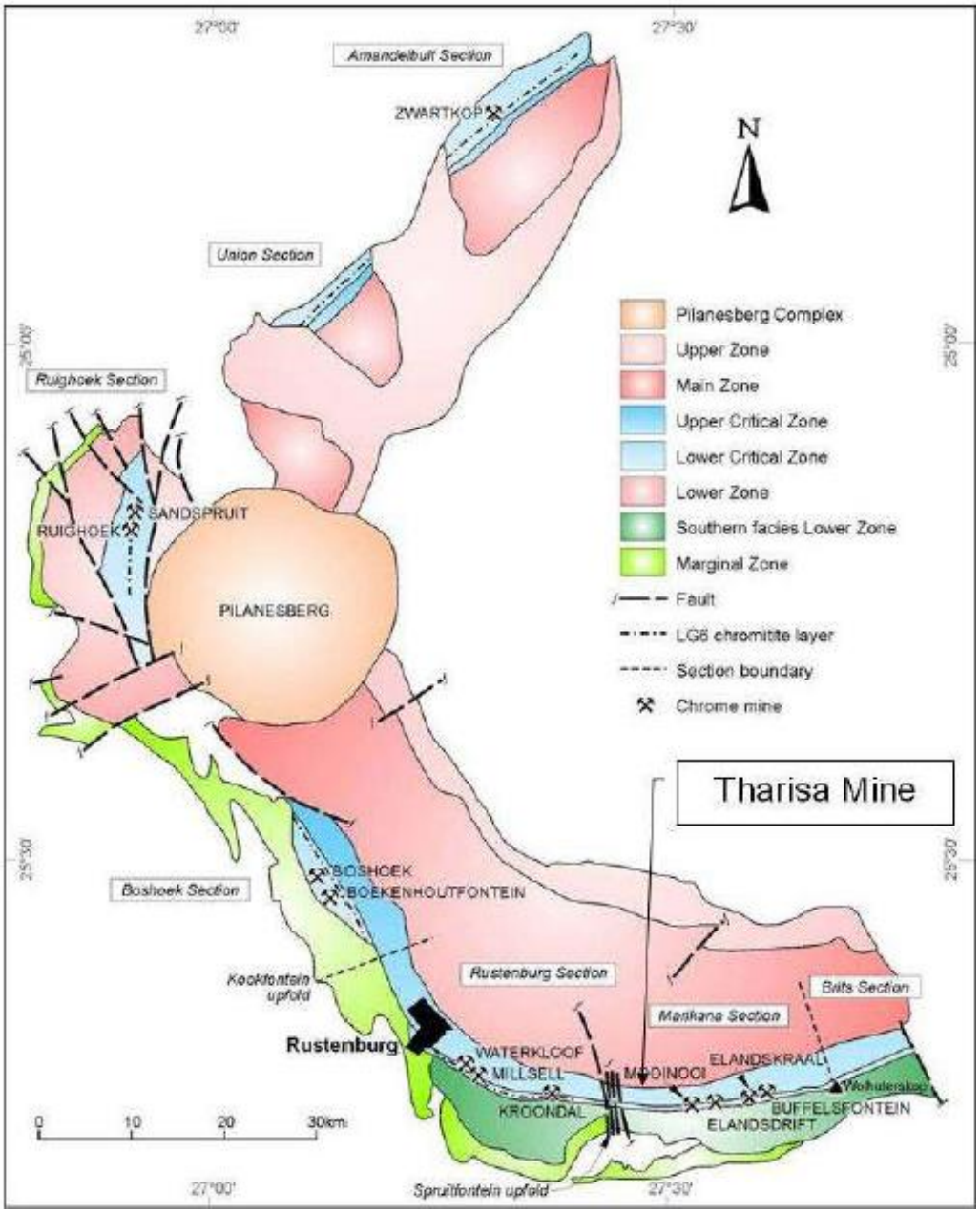

Figure 5: Map of the western BIC showing the location of the Tharisa mine

8-1.3 Structural Features

The Wolhulterskop fault and the Spruitfontein upfold occur to the east and west of the Tharisa mine, respectively. Within the Mining Right area, minor faults and some dykes occur, but there are no major displacements.

8-2 CLIMATE

The mine falls within the Highveld Climatic Zone. This is a warm temperate climate. Rain generally occurs in the spring and summer months between October and March and is generally characterised by high intensity rainfall often in the form of thunderstorms (on average 75 storms per annum) with lightning. The area also receives strong, gusty winds and the frequency of hail in the area is high (on average four to seven times per season). Tharisa mine falls within highveld climatic conditions, with hot and wet summers and cold and dry winters.

On average, winds blow from the north-west (mainly during the day time) and south east (mainly at night) however seasonal differences are observed. Wind speeds hardly reach speeds higher than 5m/s. Wind direction, speed and atmospheric conditions influence the area of impact and the extent to which pollution can occur. The highest concentrations for low level releases would occur during weak wind speeds and stable (night-time) atmospheric conditions. These climatic aspects need to be taken into consideration during the assessment of impacts and the design and implementation of the mitigation measures.

Climate can influence the potential for environmental impacts and related mine design. Specific issues include:

- Rainfall could influence erosion, evaporation, vegetation growth, rehabilitation planning, dust suppression and surface water management planning;
- Temperature could influence air dispersion through impacts on atmospheric stability and mixing layers, vegetation growth, and evaporation which could influence rehabilitation planning; and
- Wind could influence erosion, the dispersion of potential atmospheric pollutants and rehabilitation planning.

Monthly rainfall and evaporation data for the period 1903 to 2018 was sourced from the Buffelspoort weather station. The Buffelspoort weather station is situated approximately 5 km to the south of the Tharisa mine and is the closest station to the mine.

8-2.1 Regional Climate

Tharisa mine falls within the Highveld Climatic Zone. This is a warm temperate climate. Rain generally occurs in the spring and summer months between October and March and is generally characterised by high intensity rainfall often in the form of thunderstorms (on average 75 storms per annum) with lightning. The area also receives strong, gusty winds and the frequency of hail in the area is high (on average four to seven times per season).

8-2.2 Rainfall, Evaporation and Rainfall Depths

Average monthly rainfall and evaporation data for the Buffelspoort weather station is provided in Figure 6. The average monthly rainfall at the Buffelspoort weather station is 55 mm. Given that the Buffelspoort weather station is only 5 km from the Tharisa mine, similar rainfall levels can be expected at the mine. The average monthly evaporation rates are 141 mm. Consequently, monthly average evaporation rates recorded at the Buffelspoort weather station exceed the monthly average rainfall for all months. The available rainfall record was analysed to determine the annual maximum 24-hour rainfall depth (Figure 7). The probable

maximum precipitation at the Tharisa mine is estimated to be approximately 62 mm for a 24- hour rainfall duration.

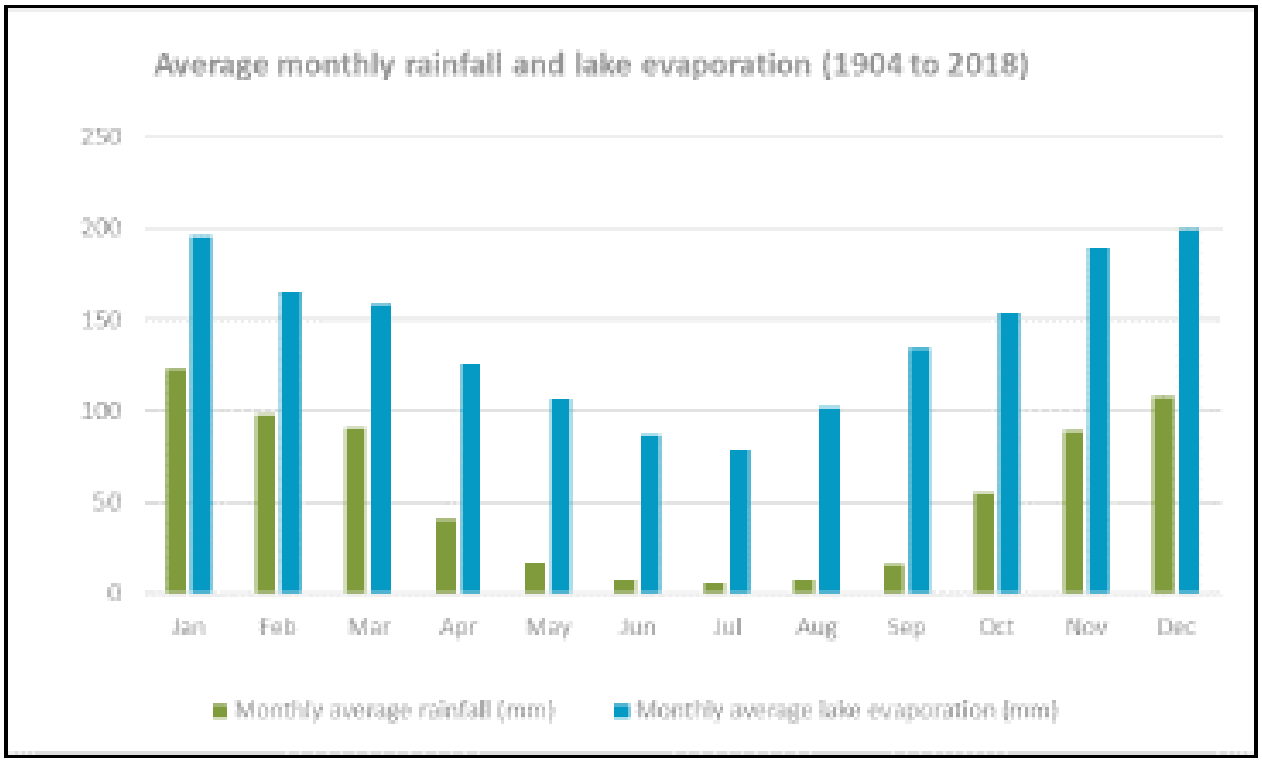

Figure 6: Average Monthly Rainfall

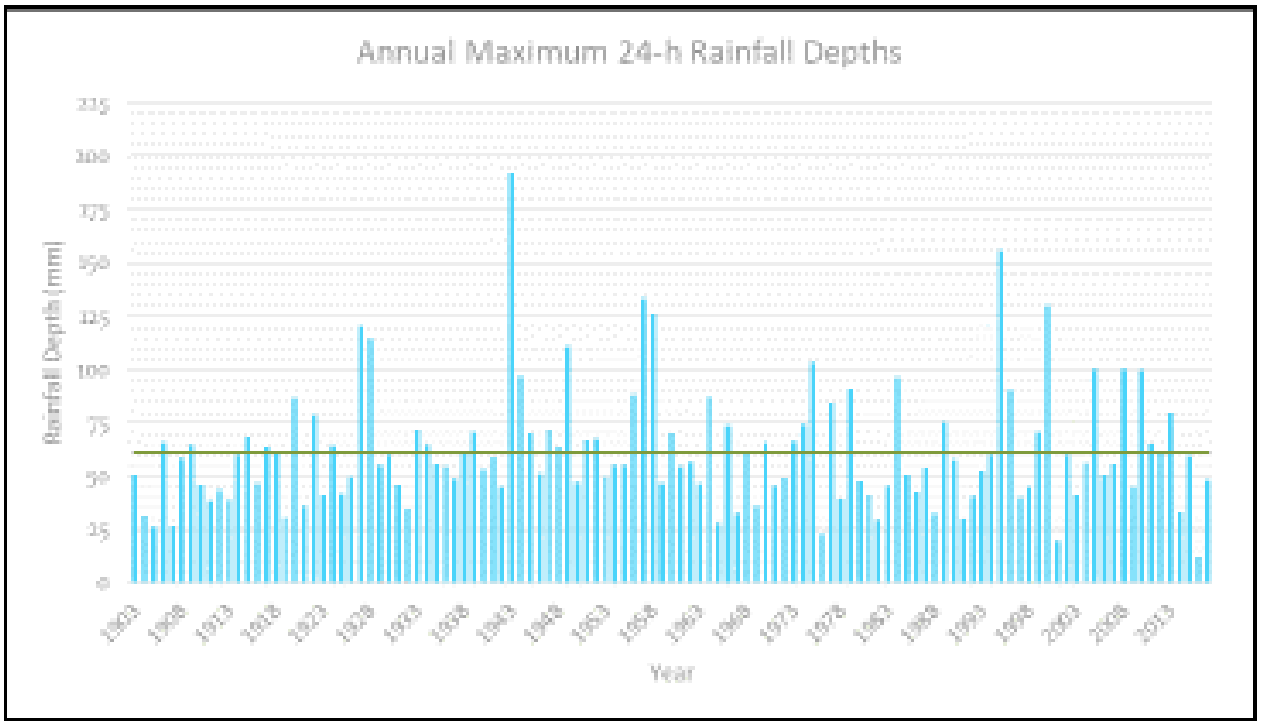

Figure 7: Daily Annual Maximum Rainfall Depths for analysed rainfall

8-2.3 Temperature

The average monthly maximum and minimum temperature values for the Buffelspoort Weather station are shown in Table 8. From the table it can be seen that the area experiences an average maximum temperature of 30.1ºC and an average minimum temperature of 11.1ºC.

Table 8: Minimum, average and maximum temperatures recorded at the Buffelspoort Weather Station

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Year
Min	17.1	16.8	15.1	11.4	6.8	3.3	3	5.5	9.9	13	14.9	16.1	11.1
Ave	23.6	23.1	21.6	18.3	14.9	11.7	11.9	14.5	18.6	20.8	21.9	22.9	18.6
Max	30.1	29.4	28.1	25.3	22.9	20	20.6	23.6	27.4	28.5	29	29.8	26.2

Wind

The annual average wind roses for the Weather Station located at the Tharisa mine for the years 2016, 2017 and 2018 are shown in Figure 8. All three years of hourly data were combined and analysed in one data pool for the establishment of the local wind field as wind roses. The wind roses were generated for all hours, daytime, night-time, as well as for the winter and summer periods. The predominant wind direction is from the north. Day time and night-time wind roses differ significantly with day times dominated by winds from the south and south east whereas night times are dominated by winds from the opposite direction, from the south. The calm conditions where wind speed is less than 1 m/s occur 48.4% of the time. In addition, winds with low speeds (< 1 m/s -3 m/s) are predominant, occurring 44.7% of the time. The average wind speed is 1 m/s.

The summer and winter wind patterns show seasonal variation (Figure 9). In winter, the majority of the winds blow from the north while in summer, there are more southerly winds. The wind speeds are slightly higher in summer than in winter. The average wind speeds in summer and winter are 1.16 m/s and 0.85 m/s, respectively.

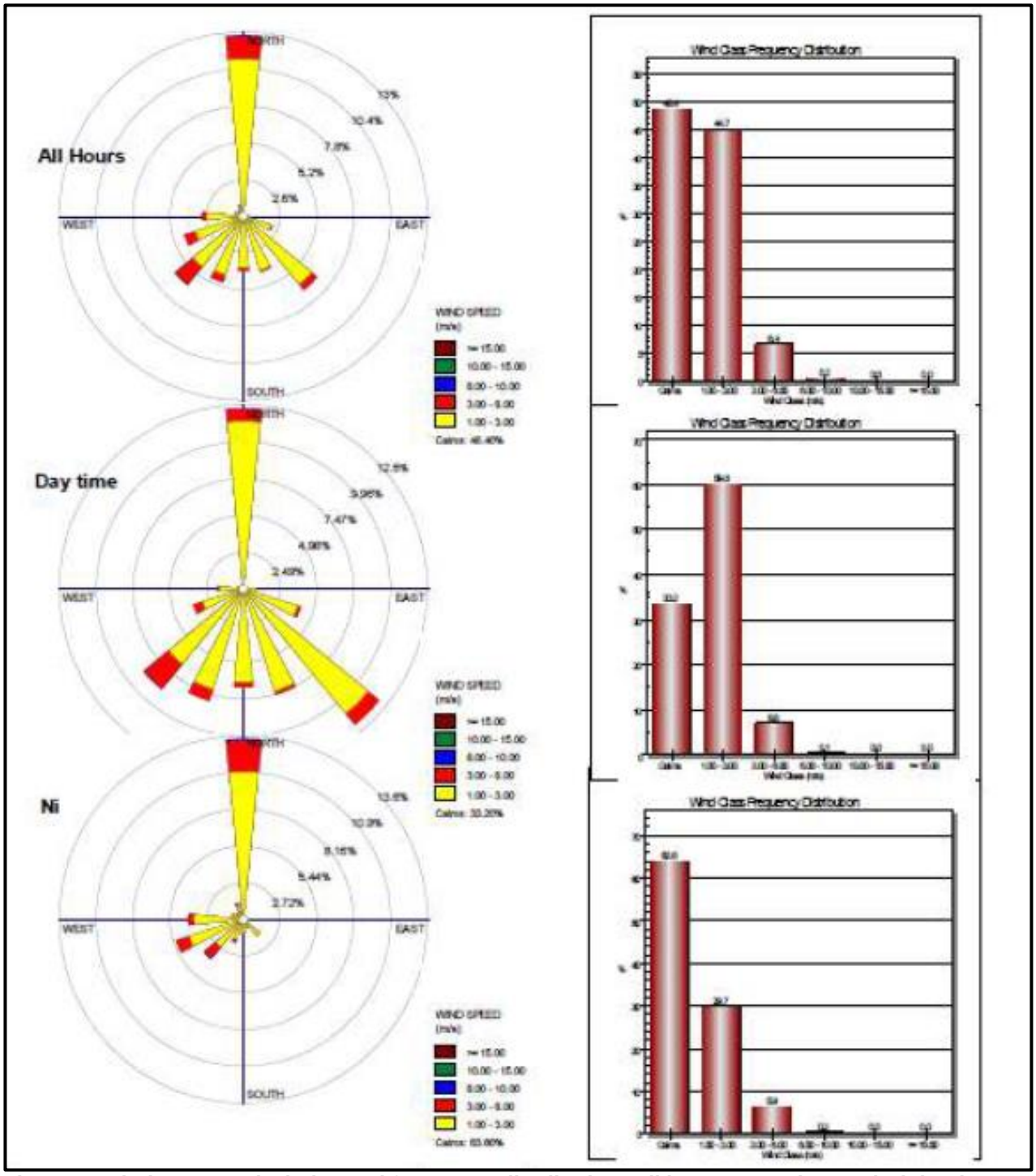

Figure 8: Wind roses and wind speed frequency distribution: All hours, Day Time and Night Time

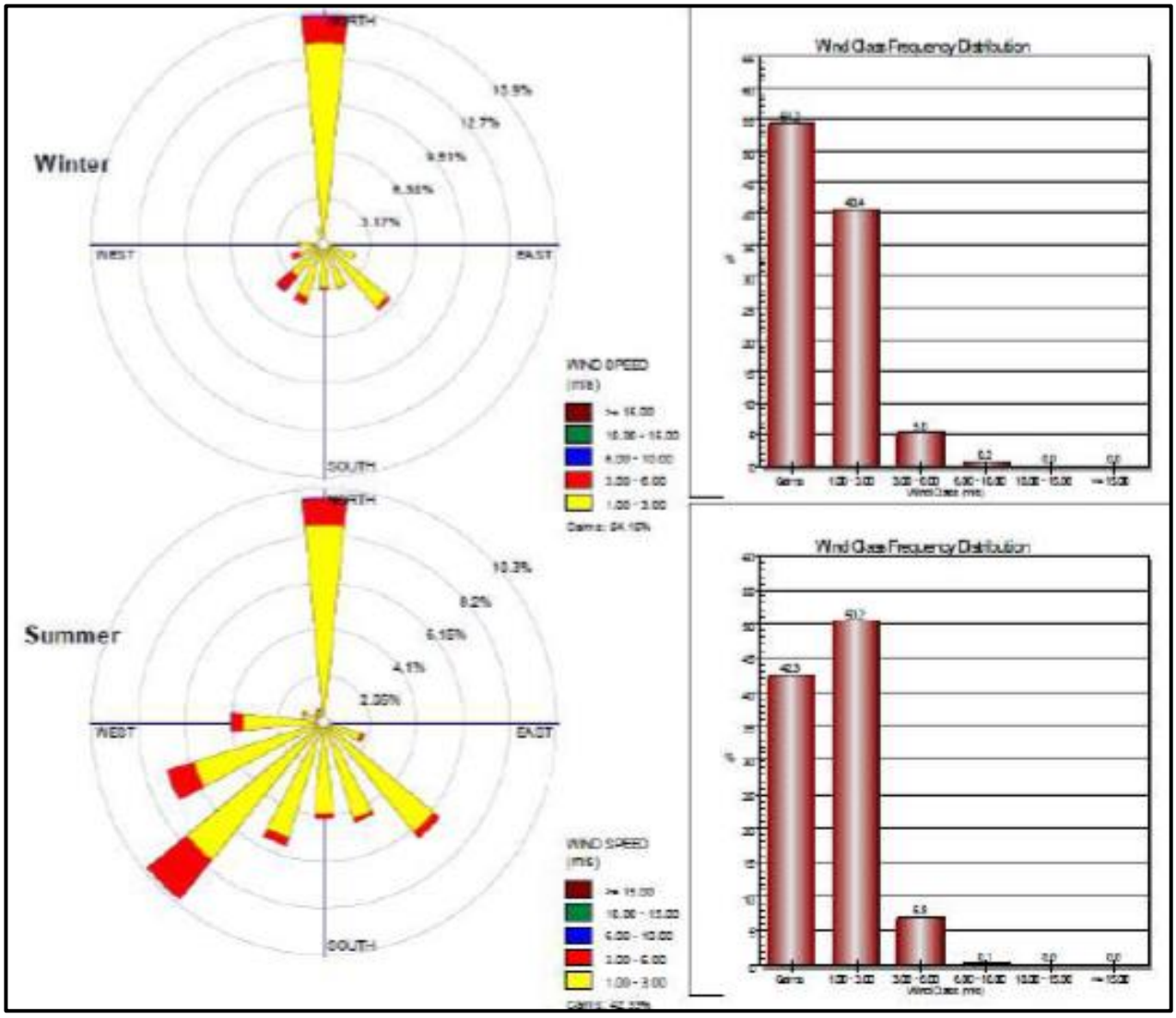

Figure 9: Wind roses and wind speed frequency distribution: Winter and Summer

Extreme Weather Conditions

Rainfall conditions are highly variable, and droughts and floods do occur.

Atmospheric Stability

During the daytime, the atmospheric boundary layer is characterised by thermal turbulence due to the heating of the earth's surface and the predominance of an unstable layer. During unstable conditions, ground level pollution is readily dispersed thereby reducing ground level concentrations. Night-times are characterised by weak vertical mixing and the predominance of a stable layer. These conditions are normally associated with low wind speeds and less dilution potential. During windy and/or cloudy conditions, the atmosphere is normally neutral (which causes sound scattering in the presence of mechanical turbulence).

For low level releases, such as activities associated with mining operations, the highest ground level concentrations would occur during weak wind speeds and stable (night-time) atmospheric conditions. However, windblown dust is likely to occur under high winds (neutral conditions).

8-3 TOPOGRAPHY AND LAND USE

The topography of the site has been altered by approved mining activities that range from open pits to mineralised waste facilities (WRDs and TSFs). The site proposed for TSF3 was previously approved as

WWRD1 extension, and therefore this application is for an amendment of the WWRD1 extension to be converted into TSF3. The presence of project infrastructure and mining activities has the potential to change the natural topography. A change in topography has the potential to influence surface water flow, the location of soils, the visual character of a landscape and the safety of third parties and animals.

Through the development of the approved mine, land within the mining footprint has changed from a mix of agriculture and residential (including community activities) to mining. The landscape character and quality of the visual resource has been altered. Land within the project footprints was mainly agricultural or transformed, with some pockets of natural vegetation and some private homesteads and associated structures (within the central WRD footprint). Land surrounding the mine is mostly used for mining operations, crop farming, livestock grazing and general community activities. Residential areas surrounding the mine range from private farmsteads to villages of varying scales including a primary school.

Tharisa mine comprises flat plains with a gentle slope (1%) towards the north. The Magaliesberg Mountain range lies approximately 2 km to the south of the mine (refer to Figure 10). Peaks in this part of the Magaliesberg Mountain range rise to approximately 1 400 mamsl. The natural topography immediately surrounding the Tharisa mine has been largely influenced by the following activities and features (refer to Figure 1):

- Mining activities associated with the surrounding Marikana Platinum Mine to the west, Western Platinum Mine to the north and Samancor Western Chrome Mine to the east;
- Community related activities associated with the Bokamoso community (located east of Far East WRD);
- The perennial Sterkstroom River, located between East Mine and West Mine, flowing in a northerly direction adjacent to the Marikana Road; and
- The N4 located immediate south of the Tharisa mine together with farming related activities.

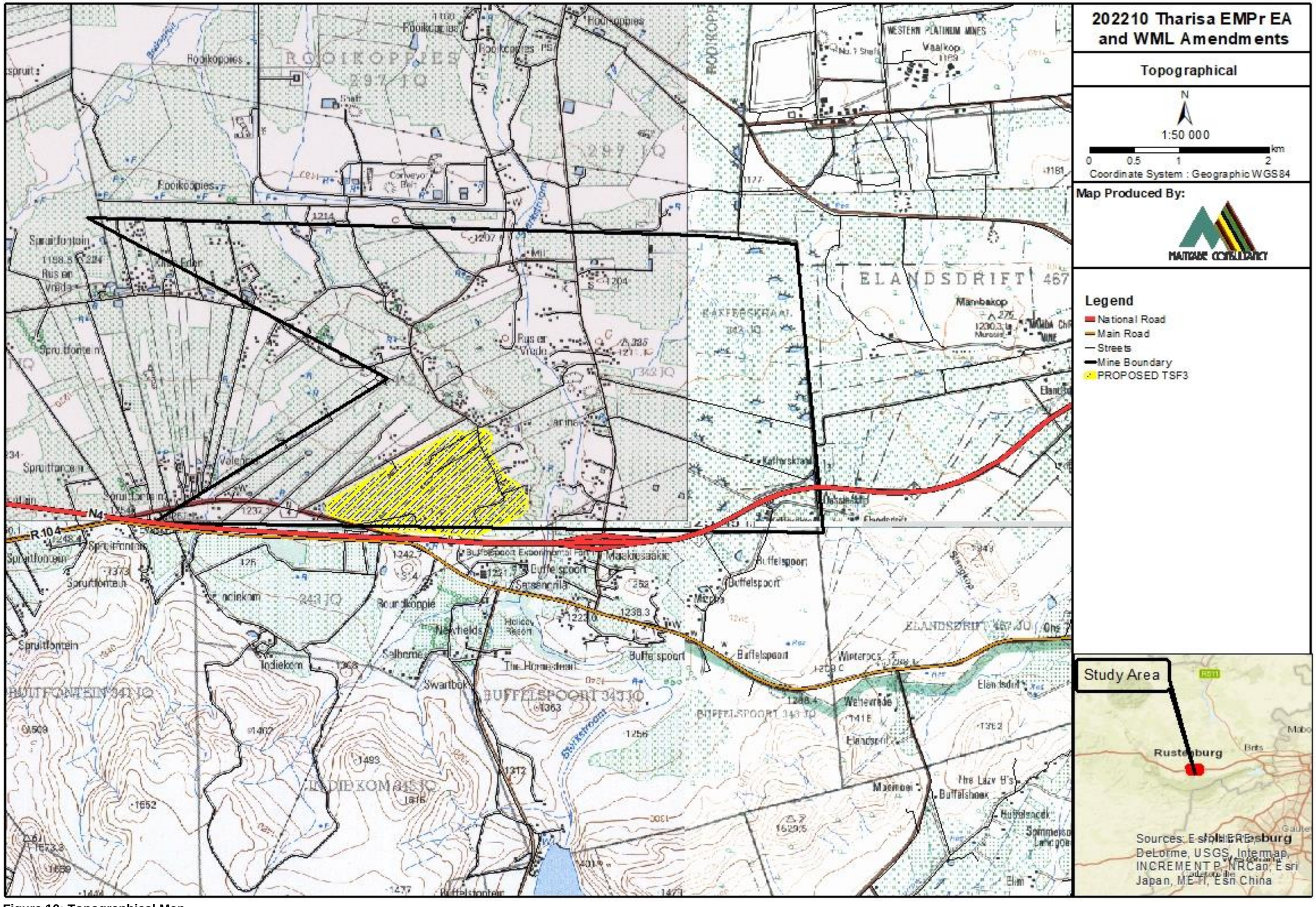

Figure 10: Topographical Map

8-4 SURFACE WATER

Surface water resources include drainage patterns and paths of preferential flow of stormwater runoff. Water quality and quantity are key indicators of the resource value and status and can have significant effect on downstream hydrology, aquatic ecology and suitability for use. Mine related activities have the potential to influence the natural drainage of surface water through the collection of runoff from stormwater management infrastructure and collection in the open pits. The project also has the potential to result in the contamination of the surface water resources through seepage from the TSF.

8-4.1 Regional Hydrology

Tharisa mine is located within the Crocodile West and Marico Water Management Area (WMA). Four drainage systems occur in the Tharisa Mining Right area. These include the perennial Sterkstroom, non-perennial tributaries of the Brakspruit (a tributary of the Sterkstroom), non-perennial tributaries of the Maretlwane (a tributary of the Sterkstroom) and a non-perennial tributary of the Elanddriftspruit. The Mining Right area falls within the quaternary catchment A21K, which falls within the Lower Crocodile Secondary Catchment. The A21K catchment area has a total catchment area of 856km^2 and an estimated mean annual runoff of 22.46 million m^3/year.

8-4.2 Local Hydrology

The perennial Sterkstroom flows from the Buffelspoort Dam, south of the N4, through the mining operations, between the East and West mining areas. Two unnamed non-perennial tributaries of the Brakspruit originate in the north-west of the mine and drain the western side of the Mining Right area. Mining of the west pit has taken place within the headwaters of these tributaries. The eastern mining area is drained by two non-perennial drainage lines that formed a tributary to the Maretlwane. Mining of the East Pit has taken place within the headwaters of these drainage lines.

The proposed TSF3 will not intersect any perennial nor non-perennial drainage lines at the Tharisa mine. In this regard, the TSF3 is approximately 170 m west from the Sterkstroom perennial river.

8-4.3 Surface Water Use

Water from the Sterkstroom River is used by the surrounding community for domestic purposes such as washing and bathing, livestock watering and for agricultural purposes. An irrigation canal flows from north to south, along the eastern boundary of TSF1. There are no users of this irrigation canal downstream of the TSF. The mine has water quality monitoring programme to monitor impacts of mining activities on water resources.

8-4.4 Surface Water Quality

Tharisa monitors surface water quality on a monthly basis as part of its surface water monitoring programme. Surface water monitoring is undertaken at the Sterkstroom and Tharisa process water facilities (SW07, SW08, SW10, SW11, SW12, SW13 and SW14). The surface water quality is compared against the amended IWUL (Licence No. 03/A21K/ABCGIJ/1468 of November 2020) surface water quality guideline limits. In addition to this, given that surface water in the area is mainly used for domestic and irrigation purposes, surface water quality data is also compared against the Target Water Quality Guideline Ranges (TWQGR) for domestic use and irrigation.

The results of the March 2022 surface water monitoring report (Aquatico, March 2022) indicate the following:

- The physico-chemical water quality in terms of pH of most of the surface water localities sampled can be described as neutral except SW10 and SW13 which are alkaline.
- The South African Water Quality Guidelines (SAWQG) domestic water guidelines were exceeded by the parameters; Electrical Conductivity (EC), Calcium (Ca), Magnesium (Mg), Sodium (Na), Sulphate (SO4) and Nitrate (NO3-N) at the majority of the process water localities (SW07 to SW14). All the variables measured at the Sterkstroom remained well within the SAWQG domestic water guidelines.
- The Mg, Na, SO_4 and NO_3-N measured at SW02 and SW03 exceeded the Baseline Data Guidelines while majority of the variables at SW01 remained below the guidelines.
- The water quality at the downstream localities of Sterkstroom generally improved when compared to the previous month and when compared to upstream locality.
- Dissolved Oxygen (DO) levels measured at Sterkstroom localities as well as SW10, SW11, SW012, SW13 and SW14 were lower than the amended IWUL limits, while the rest were higher than the IWUL limits.
- From January 2021 to December 2021, a constant pH level can be observed while an increasing trend is visible from January 2022 to February 2022. SW10 plotted higher than the amended IWUL upper limit as well as SW13 for the preceding two months.
- The EC levels at SW02 and SW03 show increasing trends from August 2021 to November 2021 with a drop in December 2021 and then increased again. A drop in EC was seen at SW02, SW03, SW08 and SW11 during March 2022.
- Long-term decreasing trend in most of the surface water localities, but from December 2021, an increase was observed. During March 2022, the concentration of NO_3-N at majority of the localities decreased.

A more comprehensive record will be provided in the EIR/ EMPr.

8-4.5 Flood Lines

The proposed TSF3 does not encroach on the flood lines.

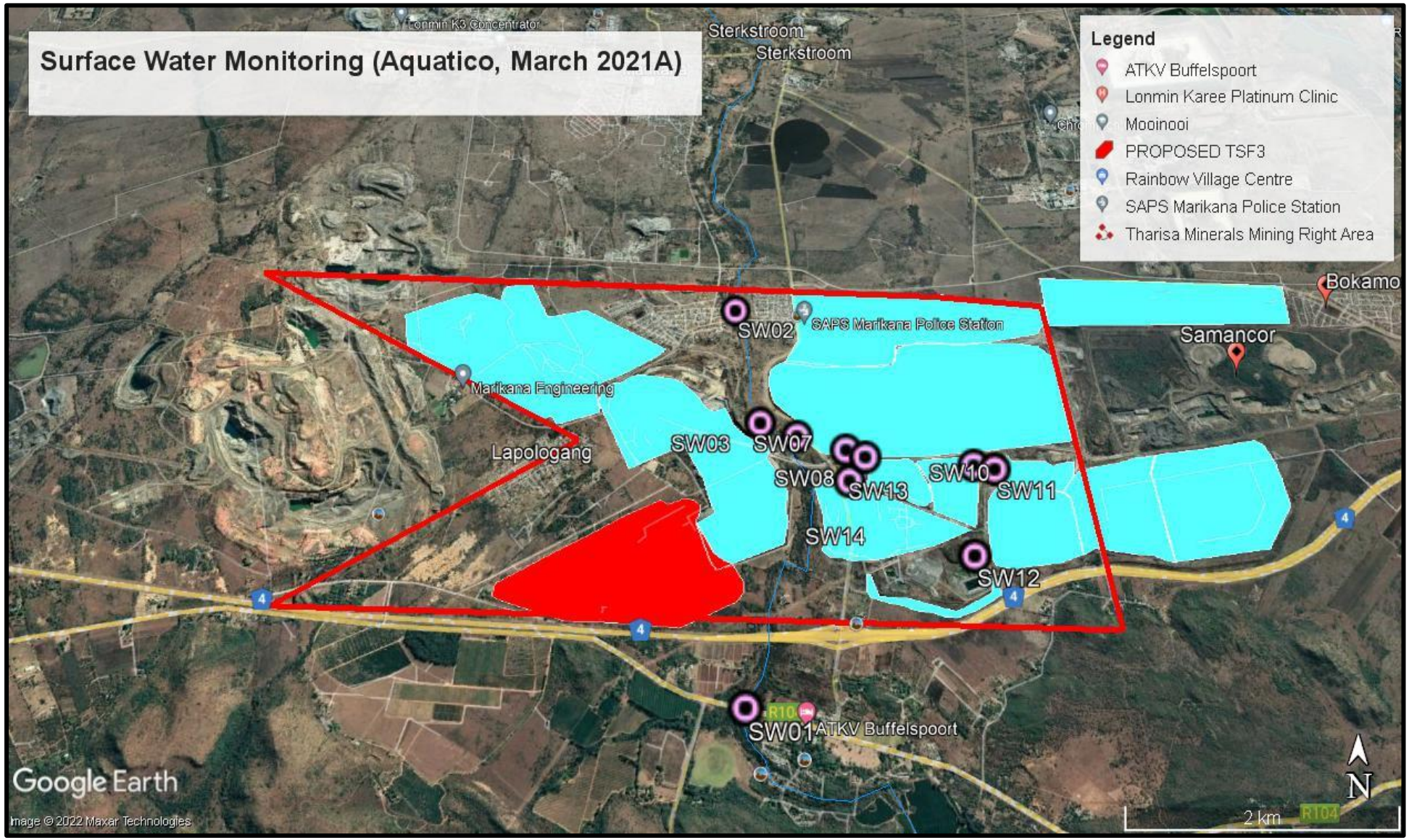

Figure 11: Surface Water Monitoring (Aquatico, March 2021A)

8-5 GROUND WATER

The Groundwater is defined as water which is located beneath the ground surface in soil/rock pore spaces and in the fractures of lithological formations and is a valuable resource. In arid areas, groundwater is frequently the sole source of water and thus essential to agriculture and other developments. Groundwater quality and quantity are key indicators of the resource value and status and can have significant effect on the suitability and availability for use. Mine-related activities have the potential to influence the quality and availability of groundwater through seepage of contaminants that may reach underlying aquifers.

8-5.1 Aquifer Classification

Tharisa mine is underlain by a shallow upper weathered aquifer and a deeper fractured aquifer. The weathered overburden is highly variable in thickness from 3 m to more than 30 m based on existing borehole logs and evidence of borehole depths. The deeper fractured bedrock aquifer is characterised by very low matrix permeability, poorly connected joints/fractures and dolerite/diabase dykes (that may act as barriers to groundwater flow).

In the vicinity of the water courses, alluvium either fully or partially, replaces the weathered overburden and the watercourses do lose and gain water to the alluvium aquifer. Recharge of the alluvial aquifers is also through lateral groundwater flow from the shallow weathered aquifer and by rainfall events. The thickness of the alluvial sediments has been estimated at 3 to 5 m with its lateral distribution restricted to the immediate banks of the current active channel.

The interface between the overlying weathered or alluvial aquifer and the deeper fractured aquifer features is relatively impermeable. Its effective permeability is determined by interconnected and open fracture systems. These fracture systems can potentially allow for rapid vertical groundwater flow from the weathered overburden as well as surface water bodies to greater depths. Whilst in general the weathered aquifer and lower fractured aquifer are poorly connected; this is not always the case.

The aquifer system is defined as a minor aquifer region with potential for higher yielding zones (defined by the groundwater specialist in accordance with Parsons (1995). Pump tests of a range of boreholes indicated that the average upper aquifer yield is between 1 and 2.5 litres /second.

8-5.2 Groundwater Recharge

Quaternary catchment A21K receives an estimated average annual groundwater recharge of 24.4 million m^3 (Mm^3), of which 3.4 Mm^3 per annum or 13.8% is required for the Reserve, consisting of both basic human needs (estimated at 0.5Mm^3/a) and an ecological component (estimated at 2.9Mm^3/a). This equates to an approximate recharge across the catchment of about 28 mm/a.

8-5.3 Groundwater Levels and Flow

The regional groundwater flow is closely related to the topography, and groundwater flows from higher lying ground in the south towards lower lying areas in the north and towards watercourses, which occur in lower lying areas. Of major importance for groundwater flow in the area is the presence of a relatively impermeable interface between the upper shallow weathered aquifer and the deeper, fractured aquifer. The pre-mining groundwater levels within the Tharisa Mining Right area were on average 10 mbgl with a range of 2 to 30 mbgl. Based on groundwater monitoring data (Aquatico, September 2021) for the period January 2021 to March 2021, groundwater levels ranged between 2 to 22 mbgl.

8-5.4 Groundwater Use

Most of the boreholes are used for domestic and agricultural (livestock and irrigation) purposes. The weathered aquifer, as well as the alluvial aquifer along the Sterkstroom River, supports most irrigation and domestic water-supply boreholes throughout the region. Boreholes (community boreholes/third party) located within the Tharisa Mining Right area are used for domestic purposes and agricultural purposes (livestock and irrigation).

8-5.5 Groundwater Quality

Tharisa monitors groundwater quality on a monthly basis as part of its groundwater monitoring programme. The monitoring programme includes monitoring community boreholes (COMM 01, COMM 02, COMM 05 and COMM 06) within the Tharisa Mining Right area and mine boreholes (Dissipator 1, Dissipator 2, HP5, MCC, RPM, Sec, TSF 01, WM 03, EM01, EM02, WM01 and FW01). Community boreholes are used by third parties, while the mine boreholes are used by Tharisa for the mine's processing purposes and for monitoring purposes.

The groundwater quality is compared against the amended IWUL (Licence No. 03/A21K/ABCGIJ/1468 of November 2020) groundwater quality guideline limits for drinking water. In addition to this, given that groundwater is also used for domestic and irrigation purposes, groundwater quality data is also compared against the TWQGR for irrigation and livestock watering purposes.

The results of the September 2021 groundwater monitoring exercise indicated the following for community boreholes/third party (Aquatico, September 2021):

- The EC, Ca, Mg, Na, Cl, SO_4 and NO_3-N concentrations exceeded the IWUL drinking guideline limits at most of the community groundwater monitoring locations. According to the classification system of the WRC (1998) "Quality of Domestic Water Supplies", the community borehole groundwater quality based on the measured variables can be classified as ideal (suitable for generations of use- COMM2, COMM 05 and COMM06) and good (suitable for lifetime use – COMM1);
- The TWQGR limits for livestock watering and irrigation of all variables measured were within the acceptable limits, except for EC for irrigation which was exceeded at all community groundwater monitoring locations;
- The EC, Ca, Mg, Na, Cl, SO_4 and NO_3-N concentrations exceeded the IWUL limits at most of the mine. groundwater monitoring localities sampled. According to the classification system of the WRC (1998) "Quality of Domestic Water Supplies", the mine boreholes can be classified as ideal (suitable for generations of use – New Well), marginal (can be used by most individuals – HP5 and TSF 01 and TSF HP5), poor (poses a health risk – MCC and SEC) and Unacceptable (No suitable for use - RPM). The poor water quality is associated with the hard park, workshop, security and the west mine activities.
- The TWQGR for livestock watering of most of the variables measured were within the acceptable limits except for NO_3-N concentrations measured at MCC (hard park), RPM (workshop), SBH (Samancor borehole), Sec (security) and WM 03 (western activities).
- The TWQGR for irrigation was exceeded in terms of EC at all of the mine groundwater localities sampled, while Na was exceeded at the RPM (workshop) and SBH (security), Cl at security. The September 2021 Aquatico monitoring report noted that the community boreholes exceeded the IWUL drinking guideline limits. However, the water quality from these boreholes was within ideal to good drinking water conditions in terms of the classification system of the WRC (1998). A more comprehensive record will be provided in the EIR/ EMPr.

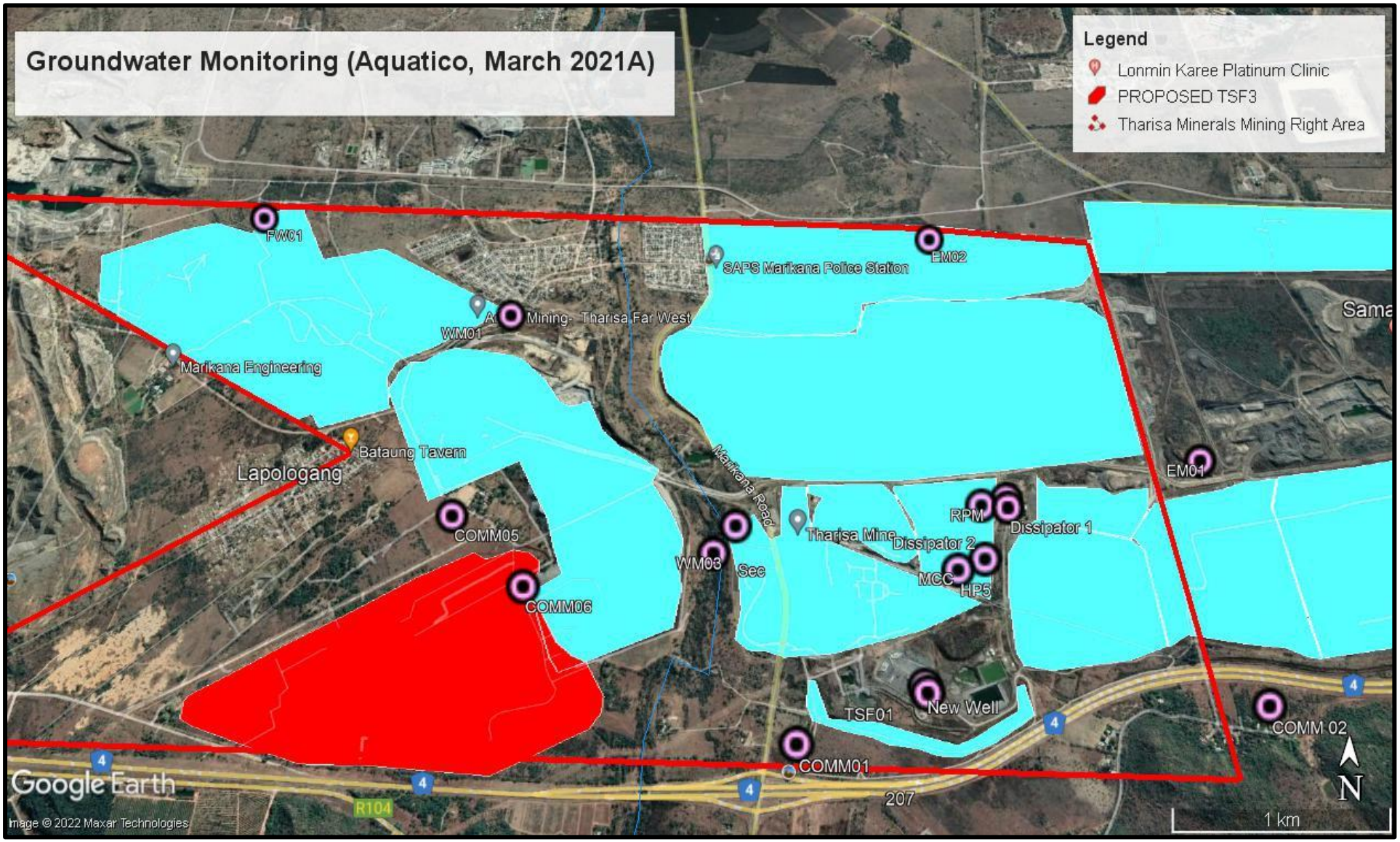

Figure 12: Groundwater Monitoring (Aquatico, March 2021A)

8-6 TERRESTRIAL ECOLOGY (FLORA AND FAUNA)

The mine falls within the Marikana Thornveld which is an important vegetation type that requires careful consideration when developing mining projects. The project area includes a terrestrial CBA and a critically endangered river (the Sterkstroom) defined by the North-West Province 2009 biodiversity assessment, and a High Biodiversity area in terms of the recently published Mining Biodiversity Guidelines. It is important to note that these national guidelines and assessments were published after the mine was approved in 2008. The area has been transformed by agricultural and mining activities (both on the project sites and in the surrounding areas), yet aquatic and terrestrial habitat, although limited, does still exist within the project area which is suitable for fauna and flora species, including some Red Data and protected species.

8-6.1 Vegetation types

As a baseline, this section provides an outline of vegetation types occurring within and surrounding the Tharisa mine, as well as within the proposed TSF3 site. The establishment of additional mining-related infrastructure have the potential to result in the loss of vegetation, habitat and related ecosystem functionality through physical disturbance and/or contamination of soil, air and/or water resources.

Tharisa mine falls within the Savanna Biome, the Central Bushveld Bioregion and within the Marikana Thornveld, and Gold Reef Mountain Bushveld vegetation types.

The proposed TSF3 is located in ESAs 1 and 2; and CBA 2 (Figure 13).

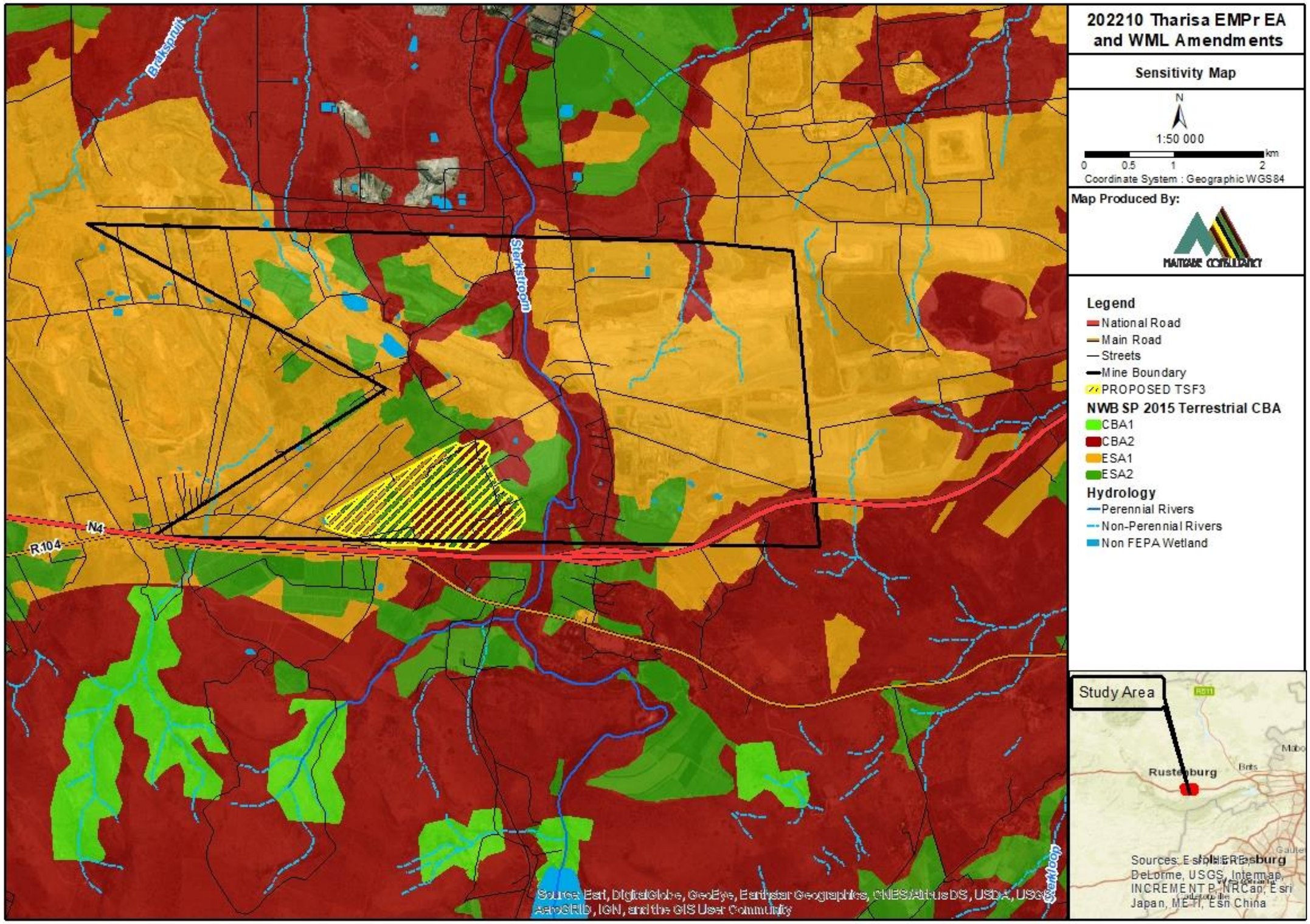

Figure 13: CBAs and ESA areas

8-7 SOIL AND LAND CAPABILITY

The soils found at the project sites are similar to those found within the approved mine footprint. Soils are structured with a high clay content. Land capable for use as grazing dominates the project area.

8-7.1 Soil Chemical Characteristics

The dominant soils at the Tharisa mine are neutral to slightly alkaline (pH of 5.2 to 7.3), which is within accepted range for good nutrient mobility. These soils tend to be saline in character. Due to the generally high clay content of the soils, the cation exchange capacity (CEC) of the soils is moderate to high. Majority of the soils within the Tharisa Mining Right area have moderate erodibility. These soils are not that prone to erosion, but compaction and contamination of these soils require assessment and mitigation.

8-7.2 Dry Land Agricultural and Irrigation Potential

Due to the general low levels of Potassium (K), Zinc (Zn) and Phosphorous (P) in the soils, the dryland production potential, especially of the shallower Valsrivier, Swartland, Sterkspruit, and Mayo soil forms is low. In order to increase the productivity to a viable and sustainable cropping potential, additional fertilisers will be required. Majority of the pre-mining footprint had a grazing land capability. In terms of soil structure and drainage capability, the irrigation potential of the soils can be described as moderate. With adequate drainage and good water management, the soils can be economically cultivated. Existing infrastructure and mining related activities at the Tharisa mine have influenced the natural capability of the land.

8-8 AIR QUALITY

Existing sources of emissions in the region and the characterisation of existing ambient pollution concentrations is fundamental to the assessment of cumulative air impacts. A change in ambient air quality can result in a range of impacts which in turn may cause a disturbance and/or health impacts to nearby receptors. The following regional sources of emissions were identified (Aquatico, January 2022a; Aquatico, February 2022b; Aquatico, March 2022c):

- Stack, vent and fugitive emissions from industrial operations - industrial emissions include various criteria pollutants [as Sulphur dioxide (SO_2), Nitrogen oxides (NO_X), Carbon Monoxide (CO) and particulates], greenhouse gases [Carbon Dioxide (CO_2) and Methane (CH_4)], volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), various heavy metals and other toxins such as dioxins and furans. Industries in the region include three platinum smelter operations, viz.: Anglo Platinum Smelter Operation (Waterval Smelter), Impala Platinum and Lonmin (Western Platinum).
- Sources of emission at these operations typically include stack emissions, including main stack releases which comprise furnace and converter off-gases, acid plant stack emissions and releases from flash dryer stacks. The furnace and converter operations are also associated with significant fugitive emissions.
- Ferro-chrome industries situated in the region, include: the Xstrata (Rustenburg) and Xstrata (Wonderkop) operations, Merafe Ferrochrome and IFM. Furnace stack emissions, furnace fugitives and baghouse stack releases represent the main sources at these operations. The induction furnaces at Joerg Foundry (Trek Engineering) represent a smaller source of industry-related emissions;
- Stack emissions from boiler operations - boiler stack emissions include particulates, NO_X, SO_2, CO, VOCs and CO_2. In addition to various smelter plants, boiler operations are also undertaken at Rainbow Chickens, Rustenburg Abattoir, MKTV Tobacco Limited, Rustenburg Provincial Hospital, British American Tobacco Products, Mageu Number One and Anglo Platinum Base Metals Refinery (BMR);
- Stack emissions from incineration operations - emissions include criteria gases (SO_2, NO_X, CO, Lead (Pb) and particulates), acid gases [Hydrogen Chloride (HCl), Hydrogen Bromide (HBr), Hydrogen

Fluoride (HFl), metal gases [Chromium (Cr), Arsenic (As), Cadmium (Cd), Mercury (Hg), Manganese (Mn), etc.] and dioxins and furans. Incineration operations are undertaken at Anglo Platinum Precious Metals Refinery (PMR), with medical waste incineration occurring at Ferncrest Hospital;

- Fugitive emissions from quarrying and mining operations - comprising mainly dust releases, with small amounts of NO_X, CO, SO_2, methane, CO_2 being released during blasting operations;
- Fugitive dust emissions from tailings impoundments which are associated with various mines in the region;
- Vehicle tailpipe emissions - significant primary pollutants emitted by motor vehicles include CO_2, CO, hydrocarbons (HCs), SO_2, NO_X, particulate matter and lead;
- Household fuel combustion (coal, wood) - coal burning emits a large amount of gaseous and particulate pollutants including SO_2, heavy metals, total and respirable particulates including heavy metals and inorganic ash, CO, polycyclic aromatic hydrocarbons (PAHs), NO_2 and various toxins such as benzo(a)pyrene. Pollutants from wood burning include respirable particulates, NO_2, CO, PAHs, particulate benzo(a)pyrene and formaldehyde. Particulate emissions from wood burning have been found to contain about 50% elemental carbon and about 50% condensed hydrocarbons;
- Biomass burning - major pollutants from veld fires are particulates, CO and VOCs. The extent of NO_x emissions depends on combustion temperatures, with minor sulphur oxides being released;
- Various miscellaneous fugitive dust sources, including agricultural activities, wind erosion of open areas, vehicle-entrainment of dust along paved and unpaved roads; and
- Ambient air pollutant concentrations within the Rustenburg region occur not only due to local sources but also as a result of emissions from various remote sources. Regionally transported air masses comprising well mixed concentrations of 'aged' (secondary) pollutants are known to represent a significant component of ambient fine particulate concentrations within the South African interior. Such air masses contain pollutants released from various remote sources including elevated releases from distant industrial operations and power generation facilities and large-scale biomass burning in neighbouring countries. Typical pollutants which circulate within such regionally transported polluted air masses include nitrates, ammonium nitrate and sulphates.

8-8.1 Dust Fallout

A dust fallout monitoring network is in place at the Tharisa mine with monitoring locations placed at residential and non-residential locations (Figure 15). Dust fallout data collected at locations at and around the Tharisa mine from January 2022 to March 2022 are tabulated below. Dust fallout at residential areas was compared to the National Dust Control Regulations guidelines for industrial areas of 1 200 mg/m^2/day and residential areas of 600 mg/m^2/day. The results indicated that for the period January 2022 to March 2022, dust fallout was within the NDCR guideline limits.

Table 9: Dust Fallout, Monitoring Results (Aquatico, January 2022A, Aquatico, February 2022 B; Aquatico, March 2022C)

Name	Description	Classification	Total Deposition Rate (mg/m^2/day)		
			January 2022	February 2022	March 2022
TMD01	Ind TP	Non-residential	1030	911	645
TMD02	Toll Gate	Residential	95	183	130
TMD03	North of West Mine		222	357	560
TMD04	Ind N4 2	Non-residential	139	228	266
TMD05	Ind N4 1		203	133	168
TMD06	Ind Lonmin 1		175	167	231
TMD08	School	Residential	313	527	209
TMD09	Glenross		122	194	263
TMD011	Lapologang		240	233	247
TMD012	Mmaditlhokwa 1		303	377	466
TMD013	Mmaditlhokwa 2		273	444	218
TMD014	Ind Lonmin 2	Non-residential	427	431	438
TMD019	Bokamoso	Residential	248	192	298

TMD020	Mmaditlhokwa 3		243	254	252
TMDKiep1	TMDKiep1		405	202	160

8-8.2 Passive SO_2 and NO_2 sampling

Passive sampling of SO_2 and NO_2 is undertaken at the Tharisa mine monthly and compared to the National Ambient Air Quality Standards (NAAQS). None of the sampling undertaken for the period January to March 2022 exceeded the NAAQS guideline limits for SO_2 and NO_2.

8-8.3 PM10 Ambient Concentrations

PM10 sampling campaigns have been on-going around Tharisa mine. The 24-hour results indicate elevated PM10 levels at the mine, as well as areas to the north and east of the mine, exceeding the daily limit of 75 µg/m³ in terms of the NAAQS for all the campaigns at almost all the locations (Figure 14). Onsite monitoring data for the period January 2020 to June 2020 was also analysed which also indicated elevated PM10 levels at the mine, exceeding the daily limit of 75 µg/m³ in terms of the NAAQS.

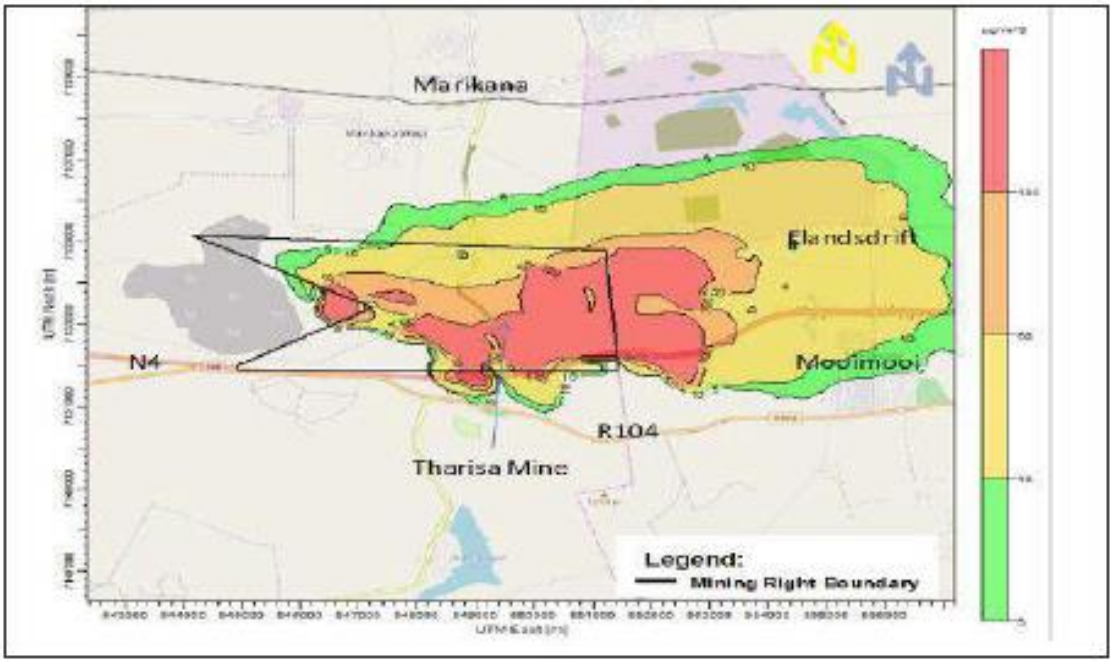

Figure 14: Maximum 24 hour PM10 concentrations (99th percentile) with the NAAQS Guideline at 75 µg/m³(LTD 2019)

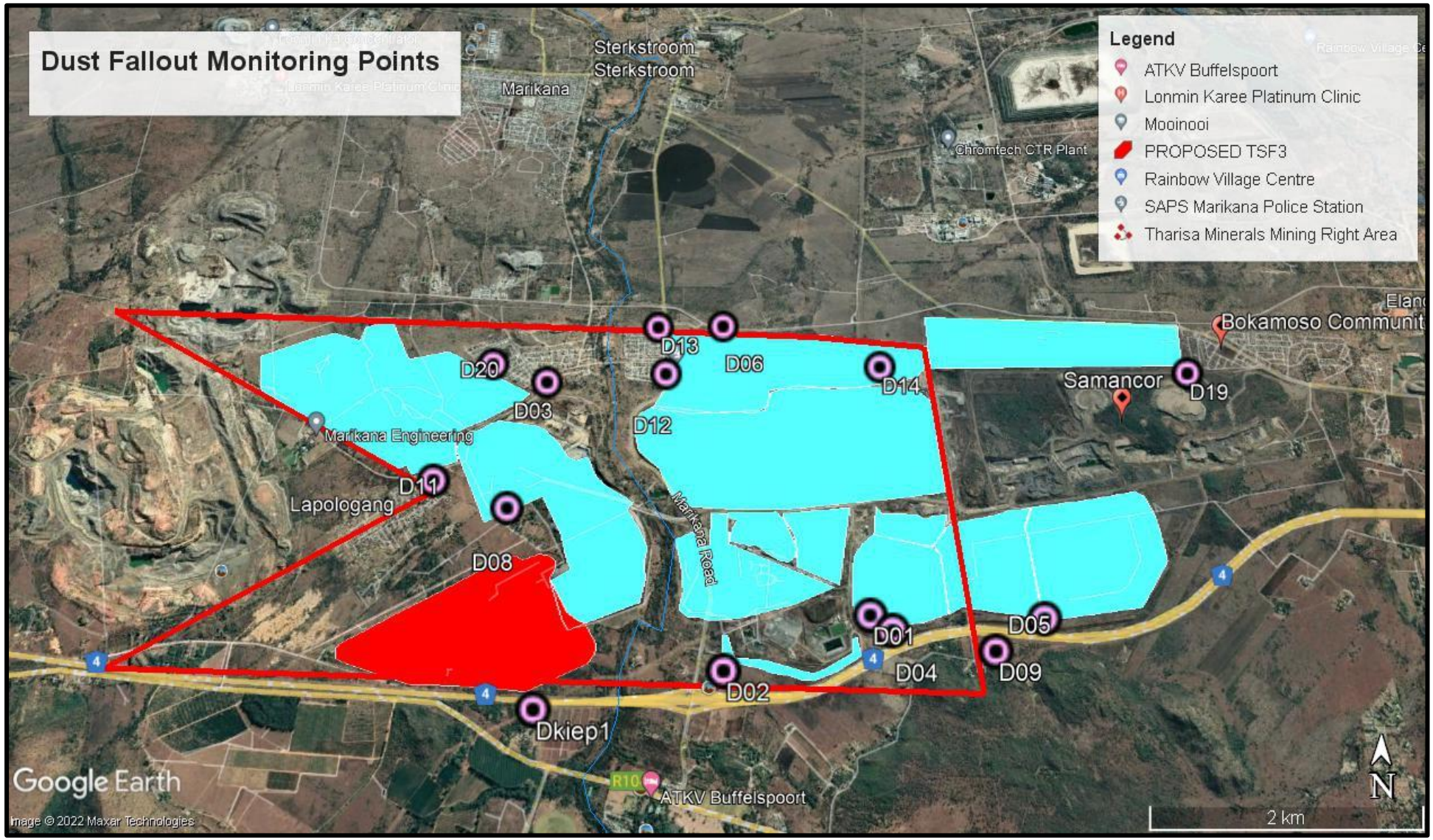

Figure 15: Dust Fallout Monitoring Points

8-9 NOISE

The noise generating activities associated with the proposed TSF3 project could cause an increase in ambient noise levels in and around the mining area.

8-9.1 Current Ambient Noise

Tharisa mine is located in an area where the character of ambient noise is already affected by industrialisation and economic activity, which over time, has resulted in an increase in road traffic noise and noise generated by intensive mining activities by surrounding mines. Road traffic emanates specifically from the N4 and various secondary roads, such as the Marikana Road that runs between the East and West mining areas at the Tharisa mine. The N4 has a wide noise footprint, affecting people living within a zone of approximately 1.2 km either side of the road, while noise generated by surrounding mining activities affects communities, farmers and other third parties in the immediate surrounds.

Noise monitoring at Tharisa mine is undertaken annually and/or in response to complaints. Noise monitoring was undertaken in 2021 by Ben van Zyl. The measured noise levels were predominantly from the Tharisa mining operations and were not a true reflection of ambient noise conditions associated with Tharisa. The results from previous surveys conducted under normal mining and plant operations found the following:

- The night-time noise impact on residents of Lapologang was 5 dB above the baseline level amounts, which was a significant impact of moderate magnitude. The primary contributor to the impact was noise from the far west mining operations (this was measured from about 01:00 when barking ceased in the evening). The primary contributors to the daytime noise were predominantly community and domestic activities. It should be noted that the noise from the mining operations could not be heard above community noises during daytime;
- The night-time noise impact on residents of Madithlokwa was 6 dB, which was a significant impact of moderate magnitude. The primary contributor to the impact was noise from East Pit mining operations, dominated by dozer activities (engine, scraping, bucket and track clutter noises). The dominant source of background ambient noise in the area during daytime are trucks and other traffic on the Marikana Road passing at a distance of 35 m east of the nearest houses in Mmadithlokwa community;
- The average daytime noise level caused by school activities (i.e. loud playing, shouting and banging noise) in the Retief Primary School was 56 dBA. The noise from mining operations was not discernible during daytime and had no measurable impact on the school;
- There was a significant drop in the background noise level from Bokamoso due to the lockdown restrictions. The ambient level during a period between 01:00 and 03:00 when WRD operations temporarily ceased, dropped to about 45 dBA from 52 dBA. This meant that the impact experienced by residents was 7 dBA. Should traffic levels return to pre-lockdown levels, the night-time perceived impact would be reduced;
- Due to the lockdown Level 3 restrictions, the only audible noise from external sources from Residence Potgieter was distant noise from Tharisa Plant and mining operations. The average night-time level was 48 dBA, which is 2 dB below the nominal baseline level (50 dBA) determined in earlier surveys. The night-time impact of Tharisa operations was negligible. No mining noise was audible during daytime; and
- The average night-time level at the Potgieter H residence had steadily increased by 5 dB from 2017 to 2021. The primary contributor to this impact was noise from the Tharisa Plant. The night-time noise impact was 9 dB, which was a significant impact of very high magnitude. During daytime, noise in this area was predominantly dominated by traffic on the Marikana Road and the N4.

8-9.2 Potential Noise Sensitive Receptors

The potential noise sensitive receptors in close proximity to the proposed TSF3 site includes the Bokamoso, Mmadithlokwa and Lapologang communities, Piet Retief Primary school and farmers. It must however be noted that TSFs do not generate significant noise during operation.

8-10 VISUAL AESTHETIC

The visual character of an area is determined by considering landscape character, scenic quality, sensitivity of the visual resource, sense of place and visual receptors. Mine-related infrastructure and activities has the potential to alter the visual aspects in a project area and surrounding area.

In general, the landscape character surrounding the mine consists of flat plains with a gentle slope towards the north, the Magaliesberg Mountain range to the south and gabbro-norite hills in the north. The area surrounding the mine is largely characterised by mining activities including the Marikana Platinum Mine to the west, Western platinum Mine to the north and Samancor Western Chrome Mine to the east. Within the Tharisa Mining Right area, the area is relatively flat and the East and West mining sections are separated by the perennial Sterkstroom River and the Marikana Road. The natural environment within and around the mining right area has been extensively disturbed by past and current mining and private farming activities. As such, mining activities and specifically residue facilities have become an integral part of the landscape topographical features and character.

The project area is largely disturbed and is characterised by Tharisa's mining-related infrastructure and activities as well as private farming and community related activities. Natural elements within the Mining Right area exist, including various scattered patches of natural habitat and the Sterkstroom River, separating the East and West mining areas. However, the Marikana Road is in close proximity and contributes a low scenic quality in contrast to the aforementioned natural features.

The proposed TSF3 site consists of natural vegetation which has been disturbed by community activities. It follows that the overall scenic quality within the proposed TSF3 project area is very low to low.

The scenic quality surrounding the mine and at Tharisa mine is linked to the type of landscapes that occurs within the area. In this regard, scenic quality can range from high to low as follows:

- High – these include the natural features such as mountains and koppies and drainage systems;
- Moderate – these include agricultural activities, smallholdings, and recreational areas; and
- Low – these include towns, communities, roads, railway line, industries and existing mines.

The scenic quality to the north, west and east of Tharisa mine has been fundamentally changed by the surrounding mining operations. To the south lies the Magaliesberg Mountain Range, which provides a high scenic quality. However, to the immediate south of the mine lies the N4 and the community of Buffelspoort. It follows that the overall scenic quality surrounding the mine is low.

The mine is visible from most of the communities immediately surrounding the mine, the road network connecting the communities, general public that travel on the N4 between Pretoria and Rustenburg, farmhouses and smallholdings located along the N4 and by people visiting parts of the Magaliesberg. Due to the flatness of the area, some views are obscured by natural vegetation. The most sensitive viewing areas would be those along the foothills of the Magaliesberg and the Magaliesberg itself where tourism potential exists.

Visitors to this area have unobstructed distant views from vantage points. Some of the project components are expected to be visible from these same areas, with others shielded by the approved operations. Thus, when viewed from the perspective of tourists and residents of the area, mining operations could be

associated with a sense of dissatisfaction. However, the proposed study area is situated within the current Tharisa mine operations and the great majority of traffic on the adjacent roads is linked with services to the mines. The proposed TSF3 project would merge with the existing facilities and is not expected to stand out. Since the visual intrusion is already present in the area, most receptors in the area and surrounds have grown accustomed to these features.

8-11 HERITAGE/ ARCHAEOLOGY AND PALAEONTOLOGY

This section describes the existing status of the heritage and cultural environment that may be affected by the project. Heritage (and cultural) resources include all human-made phenomena and intangible products that are the result of the human mind. Natural, technological or industrial features may also be part of heritage resources as places that have made an outstanding contribution to the cultures, traditions and lifestyles of the people or groups of people of South Africa.

Paleontological resources are fossils, the remains or traces of prehistoric life preserved in the geological (rock stratigraphic) record. They range from the well-known and well publicised (such as dinosaur and mammoth bones) to the more obscure but nevertheless scientifically important fossils (such as palaeo-botanical remains, trace fossils, and microfossils). Paleontological resources include the casts or impressions of ancient animals and plants, their trace remains (for example, burrows and trackways), microfossils (for example, fossil pollen, ostracodes, and diatoms), and unmineralised remains (for example, bones of Ice Age mammals).

Heritage resources of high significance occur within the extended footprint of the central WRD. These include graves and houses of historical significance. No paleontological resources are expected to occur within the mining right area.

8-11.1 Cultural Heritage background

Tharisa mine is located in the Central Bankeveld of the North West Province of South Arica. The Central Bankeveld is covered by older grabbo penetrated by younger vulcanic magma which formed the series and chains of pyramid-shaped granite hills from the Pilanesberg in the north-west to Onderstepoort near Pretoria in the east. These hills, as part of the Magaliesberg valley, represent a unique ecozone characterised by grassveld, savannah veld and near wooded valleys. The region has abundant surface water supplies. The Pienaar, the Moretele, the Hex and the Apies Rivers all drain their waters into the Crocodile River.

Tharisa is also located to the north of the Magaliesberg Mountain range, which is known for its rich and diverse range of heritage resources. Various Stone Age sites are scattered along the Magaliesberg and are also located within caves and rock shelters within the mountain. Rock engraving sites have been located further towards Maanhaarrand and Rustenburg in the west.

Blockhouses along the Magaliesberg and colonial farm homesteads are still common in Marikana and on the outskirts of Brits (Madibeng). The most abundant heritage, however, are those that date from the Late Iron Age and which are associated with the numerous Tswana chiefdoms who occupied this region during the last four centuries.

8-11.2 Heritage and palaeontological resources at the Tharisa mine

Heritage resources identified at the Tharisa mine include stone walled settlements, graveyards, a historical village and homestead, mining heritage remains, isolated and randomly scattered stone tools, historical houses and outdated and discarded agricultural implements.

8-12 SOCIO-ECONOMIC ENVIRONMENT

The mining sector is a big contributor to the economy of South Africa as well as the region. The Rustenburg area has a large concentration of mining activities, with the mining sector creating the biggest job opportunities. The proposed projects to be implemented have many positive benefits and spinoffs both during the construction and operational phases. The benefits and positive impacts have a countrywide reach. The impacts of the positive benefits of the projects have long-term implications starting from the lowest unit, which is the individual, graduating to households and/or family unit, to the local level up to the country level.

The study area falls within Ward 32 of the Rustenburg Local Municipality, Bojanala District Municipality, North West Province.

According to the latest population census [Statistics South Africa (Stats SA), 2011], the total population for the ward is 14 017. The median age of the ward is 28 years of age, which is about 10% higher than that of North West (28). As can be seen from Table 10 below, the majority of Ward 32 population is aged between 20 and 29 (27.3%). The 80+ years of age population is relatively small (0.3%).

Table 10: Population by age category

Column	Rustenburg Ward 32		Bojanala		North West	
0-9	16.3%	2,175	20.2%	289,735	22%	736,650
10-19	11.1%	1,483	16.1%	230,766	18.5%	620,245
20-29	27.3%	3,639	20.2%	290,577	18%	602,157
30-39	20.7%	2,765	15.5%	223,059	13.7%	459,720
40-49	15.1%	2,017	12.3%	176,679	11.7%	392,045
50-59	6.6%	883	7.9%	113,328	7.8%	261,441
60-69	1.8%	241	4.3%	61,325	4.5%	150,360
70-79	0.7%	94	2.4%	34,455	2.6%	85,926
80+	0.3%	39	1.2%	16,656	1.2%	40,237

Source: Statistics South Africa, 2011

Table 11 below indicates that the majority (90.5%) of Ward 32 population is white, which is much higher than that of North West (89.8%) but less than that of Bojanala (91.4%). This number is followed by 8.4% white persons, which is higher than that of North West (7.3%) and Bojanala (7%).

Table 12 shows that the majority of persons within this ward speaks Setswana (28.4%) as their home language, which is about half the figure in Bojanala (54.3%) and North West (62.4%).

Table 11: Population group

Column	Rustenburg Ward 32		Bojanala		North West	
Black African	90.5%	12,686	91.4%	1,377,821	89.8%	3,152,063
Coloured	0.6%	84	0.7%	10,931	2%	71,409
Indian or Asian	0.3%	38	0.6%	8,576	0.6%	20,652
Other	0.3%	37	0.3%	4,904	0.3%	10,444
Unspecified	0%	0	0%	0	0%	0
White	8.4%	1,172	7%	105,274	7.3%	255,385

Source: Statistics South Africa, 2011

Table 12: Population by language most spoken at home

Column	Rustenburg Ward 32		Bojanala		North West	
Setswana	28.4%	3,975	54.3%	818,050	62.4%	2,191,230
Xitsonga	16.1%	2,258	7.9%	119,090	3.6%	127,146
IsiXhosa	15.6%	2,183	5.5%	82,701	5.4%	190,601
Sesotho	10.1%	1,420	4.5%	67,458	5.7%	201,153
Afrikaans	8.5%	1,194	7.1%	106,561	8.8%	309,867
Not applicable	4.4%	611	1.9%	29,219	1.5%	52,949
Other	17%	2,377	18.9%	284,426	12.5%	437,005

Source: Statistics South Africa, 2011

According to Stats SA (2011), Ward 32 has a total of 6 978 households. There is a total of 29.7% households in this ward that are classified as informal dwellings (shacks), a little higher than the rate in Bojanala (28.3%) and about 1.5 times the rate in North West (20.5%) Table 13.

Table 13: Households by type of dwelling

Column	Rustenburg Ward 32		Bojanala		North West	
House	45.3%	3,164	59%	309,104	67.3%	738,773
Shack	29.7%	2,074	28.3%	148,221	20.5%	224,975
Flat in backyard	16.9%	1,177	3.2%	16,944	2.7%	29,344
N/A	4.1%	284	3.9%	20,238	2.9%	31,798
Other	4%	281	5.6%	29,475	6.7%	73,330

Source: Statistics South Africa, 2011

From these households, Table 14 below shows that a large percentage (63.8%) are getting water from a regional or local service provider, which is about 90% of the rate in Bojanala (74.42%) and about 90% of the rate in North West (73.63%).

Table 14: Population by water source

Column	Rustenburg Ward 32		Bojanala		North West	
Service provider	63.8%	8,949	74.4%	1,121,813	73.6%	2,584,258
Borehole	20.9%	2,926	11.4%	171,129	15.5%	542,139
Tanker	10.5%	1,472	4.4%	65,819	4.4%	154,943
Other	2.6%	361	4.7%	70,570	3.3%	115,101

Source: Statistics South Africa, 2011

In terms of access to toilet facilities, as shown in Table 15 below, 73.7% of the population have access to flush or chemical toilets, which is nearly double the rate in Bojanala (38.04%) and about 1.5 times the rate in North West (46.16%). 6% of the population have no access to any toilets, which is about 25% higher than the rate in Bojanala (4.76%) and about the same as the rate in North West (6.03%).

Table 15: Population by toilet facilities

Column	Rustenburg Ward 32		Bojanala		North West	
Flush toilet	70.8%	4,943	37%	193,771	45.3%	497,447
Pit latrine without ventilation	12%	834	43.6%	228,631	33.8%	371,565
Pit latrine with ventilation (VIP)	6.1%	429	10.9%	56,929	11.2%	122,434
None	6%	416	4.8%	24,920	6%	66,262
Other	5.2%	360	3.8%	19,731	3.7%	40,510

Source: Statistics South Africa, 2011

Another variable to consider when looking at service delivery indicators is access to refuse disposal. Within Ward 32, 61.1% are getting refuse disposal from a local authority or private company, which is about 20% higher than the rate in Bojanala (50.33%), and about 25% higher than the rate in North West (48.09%) (Table 16 below).

Table 16: Population by refuse disposal

Column	Rustenburg Ward 32		Bojanala		North West	
Service provider (regularly)	57.8%	8,107	48.8%	735,817	46.7%	1,637,612
Own dump	27.8%	3,897	40%	602,524	42.3%	1,486,089
None	6.7%	943	6.1%	92,625	6.2%	217,765
Service provider (not regularly)	3.3%	462	1.5%	22,980	1.4%	50,422
Other	4.3%	608	3.6%	53,559	3.4%	118,064

Source: Statistics South Africa, 2011

In terms of economic indicators, one can see from Table 17 below that 87.5% of the population are employed are employed in the formal and informal sectors, which is more that the rate in Bojanala (84.5%), and North West (83.2%).

Table 17: Population by employment status

Column	Rustenburg Ward 32		Bojanala		North West	
Do not know	1.4%	90	2.3%	10,273	2.1%	18,290
In the formal sector	82.1%	5,409	71.1%	314,968	68.3%	585,824
In the informal sector	7.4%	485	13.3%	58,955	14.9%	128,017
Private household	9.2%	608	13.3%	58,875	14.7%	126,264
Unspecified	0%	0	0%	0	0%	0

Source: Statistics South Africa, 2011

The average annual income within Ward 32 is R57 500.00,which is nearly double the amount in Bojanala (R30 000.00) and North West (R30 000.00). When considering the monthly income of those that are employed (Table 18), the majority (31.8%) of the Ward 32 population earn between R40 000.00 – R75 000.00 per year.

Table 18: Annual household income

Column	Rustenburg Ward 32		Bojanala		North West	
R0	5.6%	363	7.6%	33,322	8.4%	70,643
Under R4800	1.8%	117	2.7%	11,655	3.3%	27,479
R5k - R10k	4.1%	269	5.5%	23,890	7.2%	60,597
R10k - R20k	11%	713	16.4%	71,687	20%	168,666
R20k - R40k	19.1%	1,243	21%	91,578	18.7%	157,273
R40k - R75k	31.8%	2,074	22.1%	96,372	17.8%	150,385
R75k - R150k	13.8%	897	11.5%	50,121	11.4%	95,774
R150k - R300k	4.7%	307	5.8%	25,509	6.5%	54,668
R300k - R600k	1.4%	92	2.2%	9,431	2%	17,238
R600k - R1.2M	0.3%	17	0.6%	2,579	0.5%	4,578
R1.2M - R2.5M	0.1%	6	0.2%	904	0.2%	2,002
Over R2.5M	0.1%	7	0.2%	685	0.2%	1,572

Source: Statistics South Africa, 2011

SECTION 9: POTENTIAL IMPACTS IDENTIFIED

9-1 HISTORICAL IMPACTS AND MANAGEMENT MEASURES

Impacts which were identified as part of the existing mining activities and infrastructure are presented in previous approved EMPrs. The management measures identified within these EMPrs will still need to be complied with in terms of NEMA.

9-2 POTENTIAL IMPACTS AS A RESULT OF THE PROPOSED PROJECT

A number of potential impacts have been identified which will be considered further in the process as required. Typical impacts that will be investigated as part of this EIA include:

- Geology;
- Surface water;
- Ground water;
- Aquatic Ecology;
- Wetlands;
- Terrestrial Ecology (Flora and Fauna);
- Soil and Land Capability;
- Air Quality;
- Noise;
- Visual Aesthetic;
- Heritage/ Archaeology and Palaeontology; and

- Socio-Economic Environment.

Specialist baseline and impact assessments will be conducted for these impacts.

SECTION 10: METHODOLOGY TO BE USED IN DETERMINING THE SIGNIFICANCE OF ENVIRONMENTAL AND SOCIAL IMPACTS

Following is the description of the methodology, which complies with Regulation 31(2)(l) of the NEMA, which will be utilised in the rating of significance of potential environmental and social impacts of the proposed TSF3, during the Impact Assessment phase.

Extent

Rating	Description
Footprint/ site (1)	Extends only as far as the activity, such as footprint occurring within the total site area.
Local Area (2)	Affects the site.
Regional (3)	Affects the regions.
National (4)	Affects other provinces throughout the country.
International (5)	Affects other countries outside South Africa.

Intensity

Rating	Description
Very low (1)	Natural processes not affected
Low (2)	Natural processes slightly affected
Medium (3)	natural processes continue but in a modified manner A few times a month
Medium-high (4)	Natural processes are modified significantly
High (5)	Natural processes disturbed significantly so that they cease to occur (temporarily / permanently)

Duration

Rating	Description
Short-term- few days (1)	The impact will eventually not be felt due to the implementation of mitigation measures 0-5 years.
Short-term- few months (2)	The impact will eventually not be felt due to the implementation of mitigation measures 0-5 years.
Medium-term (3)	5 to 15 years from construction.
Long-term (4)	The impact will last for the entire operational phase but will end at the end of operational phase due to natural processes or human interventions.
Permanent (5)	Mitigation either by human or natural interventions/ processes will not occur in such a way or in such a time span that the impact can be considered transient.

Probability

Rating	Description
Improbable (1)	The probability of an impact occurring is none, either due to the design, historic circumstances, design, or experience.
Possible/ probable (2)	The probability is very low.
Likely (3)	The probability is low.
Highly probable/ possible (4)	It is most likely that the impact will occur.
Definite (5)	The impact will occur regardless of any prevention measures.

Determination of Significance without mitigation

Significance provides an indication of the importance of the impact in terms of both tangible and intangible characteristics. The significance of the impact without mitigation is the prime determinant of the nature and degree of mitigation required. Where the impact is positive, significance is noted as positive. Significance will be rated on the following scale:

SIGNIFICANCE = E+ I+ D + P

The minimum result should give a minimum value of 5, maximum of 25. This will determine whether the impact is negative or positive.

Rating	Description
No significance= <1	The impact is not substantial and does not require any mitigation action
Low = 1– 5	Low consequence, probably, minimal mitigation may be required.
Medium = 6 to 10	Medium consequence, probably, mitigation is advised/ preferred. The impact is of importance and is therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.
Medium–high = 11 to 15	Medium to high consequence, probably to very probable, mitigation is necessary. The impact is of major importance but through the implementation of the correct mitigation measures, the negative impacts will be reduced to acceptable levels.
High = 16 to 20	High consequence, probably / definite, mitigation is essential. The impact is of major importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.

Mitigation

The impacts that are generated by the project activity can be minimised if measures are implemented in order to reduce the impacts. The mitigation measures ensure that the project activity considers the environment and the predicted impacts in order to minimise impacts and achieve sustainable development.

Determination of Significance with mitigation

Determination of significance with mitigation refers to the foreseeable significance of the impact after the successful implementation of the necessary mitigation measures. Significance with mitigation will be rated on the following scale:

Rating	Description
No significance:	The impact will be mitigated to the point where it is regarded as insubstantial.
Low	Low consequence, probably, the impact will be mitigated to the point where it is of limited importance.
Medium	Medium consequence, probably, the negative impact will remain of significance. However, taken within the overall context of the project, the persistent impact does not constitute a fatal flaw;
Medium–high	Medium to high consequence, probably to very probable, mitigation is necessary. The impact is of major importance but through the implementation of the correct mitigation measures, the negative impacts will be reduced to acceptable levels.
High	High consequence, probably/ definite, mitigation is essential. The impact is of major importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable. Mitigation is therefore essential.
Extreme	Very high consequence, definite, fatal flaw!

SECTION 11: POSITIVE AND NEGATIVE IMPACTS OF THE PROPOSED ACTIVITY AND ALTERNATIVES

Refer to Section 9 for the potential positive and negative impacts which have been identified for the proposed conversion of WWRD 1 - extension into TSF3. A detailed assessment of the potential positive and negative environmental and social impacts associated with the proposed conversion of WWRD 1 - extension into TSF3 will be developed and included in the EIR/ EMPr.

SECTION 12: POSSIBLE MITIGATION MEASURES THAT COULD BE APPLIED AND THE LEVEL OF RISK

The proposed conversion of WWRD 1 - extension into TSF3 will occur within the existing Tharisa mining right area, which has already been affected by current mining activities. The specialist studies will assess potential environmental and social impacts that may occur as a result of activities related to the proposed conversion of WWRD 1 - extension into TSF3. Appropriate mitigation and management measures to avoid and/or minimise the identified impacts associated with the project will be developed and included in the EIR/ EMPr. Refer to Section 9 for the potential positive and negative impacts which have been identified for the proposed conversion of WWRD 1 - extension into TSF3.

SECTION 13: MOTIVATION WHERE NO ALTERNATIVES WERE CONSIDERED

At least two (2) design alternatives are being considered i.e. no barrier option and the base preparation/ barrier option. During the Impact Assessment phase, the designs will be tested further. MC will give evidence that either design would be the BPEO from the environmental and socio-economic perspective, and that all risks will be appropriately managed. The risk assessment will enable an evaluation of the effectiveness of either alternative.

Tharisa Mining Right boundary has significant space constraints due to the existing infrastructure. Tharisa mine is also bordered by other mining companies (Western Platinum, Marikana Platinum and Samancor mines) on the West, North and Eastern boundaries of the Tharisa Mining Right area. The N4 and farming community of Buffelspoort is located to the South of the Tharisa mine. The addition of TSFs is dictated by the space available within the mining right area. To minimise the extent of the project disturbance, portions of the project footprint will be located on previously disturbed areas. No location alternatives for the proposed project could be considered. Given that the project components relate mainly to storage of waste material in order for mining to effectively take place and optimising approved mining activities, no real site alternatives exist for the project.

SECTION 14: STATEMENT MOTIVATION THE PREFERRED SITE

The location of the proposed conversion of WWRD 1 - extension into TSF3 components is constrained to the location of the existing infrastructure. As such, no property alternatives were deemed viable. The position of the proposed project was influenced by the existing WWRD1 extension, which is to be converted into a TSF. As mentioned above, the proposed study site was previously approved as a WRD.

SECTION 15: PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

15-1 DESCRIPTION OF ALTERNATIVES TO BE CONSIDERED INCLUDING THE OPTION OF NOT GOING AHEAD WITH THE ACTIVITY

Refer to Section 6 for consideration of alternatives.

15-2 DESCRIPTION OF ASPECTS TO BE ASSESSED AS PART OF THE EIA PROCESS

Different impacts can occur during the different phases of a project, from pre-construction to final rehabilitation and closure phase. For this reason, project specific activities that will be undertaken during each project phase will need to be assessed in light of the methodology detailed in Section 10 of this report.

Table Table 19 lists the main project related activities that will be undertaken during the different phases of the proposed project, and which will need to be assessed during the Impact Assessment phase.

Table 19 Proposed project related activities during different project phases

Pre-Construction	Site clearing and grubbing of the footprint area.
	Relocation of plant species of conservation concern (if found on site).
	Relocation of sensitive heritage sites (if found on site).
	Protection of Overhead and Underground Services.
Construction	Construction of access roads.
	Construction of the pipeline system.
	Construction of the TSF
Operation	Utilisation of haul roads and other services.
	Deposition of tailings on the proposed TSF.
	Utilisation of pipeline systems.
Closure / Rehabilitation	Demolition of project related infrastructure, i.e. roads, pipelines, etc.
	Handling of potential contaminated soils.
	Final shaping and rehabilitation of the TSF.
	Aftercare monitoring.
Post Closure	This is a period of maintenance and monitoring of the various structures and infrastructure closed during the time of rehabilitation. The activities are limited to monitoring activities and maintenance or repairing of erosion and vegetation if necessary.

15-3 DESCRIPTION OF ASPECTS TO BE ASSESSED BY SPECIALISTS

The following aspects will be assessed as part of the Impact Assessment process for the proposed conversion of WWRD 1 - extension into TSF3:

The following specialists' studies will be undertaken, for the various environmental aspects:

- Soils, Land Capability and Land Use/ Agricultural Potential Assessment.
- Surface Water Study, including Wetland Delineation, Freshwater (aquatic) and Terrestrial Ecology.
- Air Quality Impact Assessment Study.
- Noise Impact Assessment.
- Heritage Impact Assessment (HIA) screener and Exemption of Palaeontological Impact Assessment.
- Social Impact Assessment.
- Visual Impact Assessment.

The following studies have been undertaken, and their findings will be incorporated into the EIR/ EMPr.

- Geohydrological Investigations.
- Geochemistry study and Waste Assessment.

The specialists will assess the impacts (including cumulative effects) of the proposed activity/aspect in relation to the construction, operational, closure and decommissioning phases. The reports will detail appropriate and implementable measures to avoid, mitigate and manage the potential impacts that have been identified.

15-4 PROPOSED METHOD OF ASSESSING THE ENVIRONMENTAL ASPECTS INCLUDING THE PROPOSED METHOD OF ASSESSING ALTERNATIVES

The EIA will be undertaken according to a standardised methodology, which is detailed in Section 10 of this report, which complies with Regulation 31(2)(l) of the NEMA.

15-5 THE PROPOSED METHOD OF ASSESSING DURATION SIGNIFICANCE

Refer to Section 10 for the significance assessment, which includes duration.

15-6 STAGE AT WHICH THE COMPETENT AUTHORITY WILL BE CONSULTED

A pre-application meeting was convened with the DMRE on Friday, 22 July 2022.

The meeting objectives were as follows:

- Introduce Tharisa (the proponent) &MC (the appointed EAP).
- Provide project background of the proposed amendment applications.
- Present design alternatives.
- Confirm specialist studies to be undertaken.
- Confirm department's requirements on submission of the EA, EMPr and WML amendment application.

The DMRE will be consulted throughout the project application phases as follows:

- The Draft Scoping Report will be finalised, and the Final Scoping Report will be submitted to the DMRE for approval once comments and feedback have been received from I&APs and authorities.
- A Draft EIR/ EMPr will also be compiled which will include management measures to avoid, mitigate and manage the potential impacts identified in the Impact Assessment. The report will also be subjected to PPP for another 30 days. Subsequently, the report will be finalised, incorporating comments from I&APs for submission to the DMRE.
- The DMRE will then decide on the submission. The decision will then be communicated to all stakeholders.

SECTION 16: PARTICULARS OF THE PPP WITH REGARDS TO THE IMPACT ASSESSMENT PROCESS THAT WILL BE CONDUCTED

Refer to Section 7 for the PPP to be undertaken throughout the application phases.

16-1 STAKEHOLDER ENGAGEMENT DURING IMPACT ASSESSMENT PHASE

The objectives of public participation during the Impact Assessment phase are to verify that I&APs issues have been considered in the Impact Assessment, and to comment on the findings of the S&EIR, including the potential negative and positive impacts and the proposed management measures.

MC will compile and announce the availability of Draft Environmental Impact Assessment Report (EIR), which will include an EMPr. The report will be subjected to PPP of at least 30 days and will reflect the incorporation of comments received, including any comments of the competent and commenting authorities.

The following processes will be undertaken to announce the Draft EIR:

- Letters will be sent to all I&APs, written in any of the manners provided for in section 47D of the NEMA, announcing the availability of the Draft EIR to the municipal councillor of the ward in which the site is situated and any organisation of ratepayers that represent the community in the area, the municipality which has jurisdiction in the area, any organ of state having jurisdiction in respect of any aspect of the activity; and any other party as required by the competent authority.
- Subsequent to the 30 days' period, all comments and representations received from I&APs will be considered and recorded in the CRR. All I&APs who would have participated in the PPP will be thanked, and their comments acknowledged.

16-2 NOTIFICATION OF AUTHORITY DECISION

MC will ensure that all registered I&APs are provided with access to the decision and the reasons for such decision. I&APs will be drawn to the fact that appeals may be lodged against the decision in terms of the National Appeals Regulations of 2014 (GNR. 993), if such appeals are available in the circumstances of the decision. The decision will be advertised through the following methods:

- Personalised letters to individuals and organisations on the stakeholder database; and
- Placement of a newspaper advert in the same local newspaper where the project and the availability of the Draft Scoping Report was announced.

16-3 DESCRIPTION OF THE TASKS THAT WILL BE UNDERTAKEN DURING THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The following activities will take place as part of the planned S&EIR process going forward:

- The Draft Scoping Report will be finalised, and the Final Scoping Report will be submitted to the DMRE for approval once comments and feedback have been received from I&APs and authorities.
- The Specialists studies will be undertaken, and potential impacts as identified in this Draft Scoping Report will be assessed during the Impact Assessment Phase.
- A Draft EIR/ EMPr will also be compiled which will include management measures to avoid, mitigate and manage the potential impacts identified in the Impact Assessment. The report will also be subjected to PPP for another 30 days.
- Subsequently, the report will be finalised, incorporating comments from I&APs for submission to the DMRE.
- The DMRE will then decide on the submission. The decision will then be communicated to all stakeholders.

SECTION 17: MEASURES TO AVOID, REVERSE, MITIGATE OR MANAGE IDENTIFIED IMPACTS AND TO DETERMINE THE

EXTENT OF THE RESIDUAL RISKS THAT NEED TO BE MANAGED AND MONITORED

The EMPr will incorporate measures aimed at mitigating and managing impacts of the proposed TSF. Mitigation measures as prescribed in the approved EMPrs will be incorporated into the EMPr, which will assist in the development of a more effective environmental management tool for Tharisa's current operations.

The updated EMPr will allow for a greater level of alignment between the different EMPrs in terms of management measures and monitoring reporting requirements. Detailed mitigation and management measures for identified positive and negative impacts associated with the proposed conversion of WWRD 1 - extension into TSF3 will be developed and included in the EMPr.

SECTION 18: OTHER INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

18-1 IMPACTS ON THE SOCIO-ECONOMIC CONDITIONS OF ANY DIRECTLY AFFECTED PERSON

Detailed mitigation and management measures of potential positive and negative impacts associated with the proposed conversion of WWRD 1 - extension into TSF3 will be developed and included in the EMPr. Extensive specialist work has already been conducted as part of the previous EMPrs amendments for Tharisa, and there is a good understanding of the socio-economic environment within the area. This aspect will be further investigated by the appointed Social Impact Assessment (SIA) specialist during the Impact Assessment phase.

18-2 IMPACT ON ANY NATIONAL ESTATE REFERRED TO IN SECTION 3(2) OF THE NHRA

A HIA screener and Palaeontological Assessment exemption letter has been compiled for other mine's related activities. The documentation will be updated for the proposed TSF.

SECTION 19: OTHER MATTERS REQUIRED IN TERMS OF SECTIONS 24(4)(A) AND (B) OF THE ACT

Not Applicable.

SECTION 20: UNDERTAKING REGARDING CORRECTNESS OF INFORMATION

I **Mpho Manyabe**, the EAP responsible for compiling this report, undertake that:

- The information provided in this report is correct, and that the level agreement with U&APs and stakeholders has been correctly recorder and reported herein.

It must however be noted that this Draft Scoping Report is being subjected to PPP for commenting by the general public and state departments in parallel with the submission of the application forms to DMRE. Comments and objections received from stakeholders will be recorder accordingly.

SECTION 21: STATEMENT OF MC'S INDEPENDENCE

I **Mpho Manyabe**, the EAP responsible for compiling this report, undertake that:

- I act as the independent EAP in this application for the conversion of WWRD 1 - extension into TSF3 at west mine.
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant.
- I declare that there are no circumstances that may compromise my objectivity in performing such work.

SECTION 22: CONCLUSION

This Draft Scoping Report has been complied in accordance with Appendix 2 of the NEMA EIA Regulations of 2014, as amended, and provides a description of the proposed project.

This Draft Scoping Report has been complied in accordance with Appendix 2 of the NEMA EIA Regulations of 2014, as amended, and provides a description of the proposed project. The Draft Scoping Report entails the following:

- Details of the EAP who prepared the report; and the expertise of the EAP, including a curriculum vitae;
- The location of the activity, including 21 digit Surveyor General (SG) code;
- Locality Map;
- A description of the scope of the proposed activity, including all listed and specified activities triggered;
- A description of the activities to be undertaken, including associated structures and infrastructure;
- A description of the policy and legislative context within which the development is proposed, including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to the activity and are to be considered in the Impact Assessment;
- A motivation for the need and desirability for the proposed project, including the need and desirability of the activity in the context of the preferred location;
- A full description of the process followed to reach the proposed preferred activity, site and location of the development footprint within the site, including details of all the alternatives considered;
- Details of PPP undertaken in terms of regulation 41 of the Regulations;
- The environmental attributes associated with the alternatives, focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;
- The impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified impacts;
- Identification of positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;
- The possible mitigation measures that could be applied and level of residual risk;
- The motivation for not considering location alternatives;
- A concluding statement indicating the preferred alternatives, including preferred location of the activity;
- A plan of study for undertaking the Impact Assessment process to be undertaken;
- Description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity;
- Description of the aspects to be assessed as part of the Impact Assessment process;
- Aspects to be assessed by specialists;
- Description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists;
- Description of the proposed method of assessing duration and significance;

- An indication of the stages at which the competent authority will be consulted;
- Particulars of the PPP that will be conducted during the Impact Assessment process;
- Description of the tasks that will be undertaken as part of the Impact Assessment process;
- Identification of suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.
- An undertaking under oath or affirmation by the EAP in relation to the correctness of the information provided in the report;
- An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and I&APs on the plan of study for undertaking the EIA;
- Any specific information required by the competent authority; and
- Any other matter required in terms of section 24(4)(a) and (b) of the Act.

It must however be noted that this Draft Scoping Report is being subjected to PPP for commenting by the general public and state departments in parallel with the submission of the application forms to DMRE. Comments and objections received from stakeholders will be recorder accordingly.

The following activities will take place as part of the planned S&EIR process going forward:

- The Draft Scoping Report will be finalised, and the Final Scoping Report will be submitted to the DMRE for approval once comments and feedback have been received from I&APs and authorities.
- The Specialists studies will be undertaken, and potential impacts as identified in this Draft Scoping Report will be assessed during the Impact Assessment Phase.
- A Draft EIR/ EMPr will also be compiled which will include management measures to avoid, mitigate and manage the potential impacts identified in the Impact Assessment. The report will also be subjected to PPP for another 30 days.
- Subsequently, the report will be finalised, incorporating comments from I&APs for submission to the DMRE.
- The DMRE will then decide on the submission. The decision will then be communicated to all stakeholders.

SECTION 23: REFERENCES

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APPENDICES

APPENDIX 1: LOCALITY MAP, MASTER PLAN; LAYOUT PLAN AND OTHER SITE MAPS

APPENDIX 2: AUTHORITY CORRESPONDENCE

APPENDIX 3: PUBLIC PARTICIPATION PROCESS

APPENDIX 4: EAP DETAILS (CV, QUALIFICATIONS AND REGISTRATION BODIES CERTIFICATES)

APPENDIX 5: EXISTING APPROVALS