

ADDITIONAL WASTE ROCK STORAGE PROJECT

Tharisa Mine, near Marikana in the North West Province

SCOPING REPORT AVAILABLE FOR PUBLIC REVIEW

SUBMITTED FOR ENVIRONMENTAL AUTHORISATION IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT 107 OF 1998), AS AMENDED, AND THE NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT (ACT 59 OF 2008) IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT (ACT 28 OF 2002), AS AMENDED

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EXECUTIVE SUMMARY

INTRODUCTION

This Executive Summary provides a synopsis of the Scoping Report compiled and distributed for review and comment as part of the Scoping and Environmental Impact Assessment process (S&EIA) that is being undertaken for an integrated Environmental Authorisation process at the Tharisa Mine.

PROJECT BACKGROUND

Tharisa Minerals (Pty) Ltd (Tharisa) is an opencast mining operation that produces chrome and platinum group metal (PGMs) concentrates. The mine has been operational since 2008. The opencast mine is located on farms 342 JQ and Elandsdrift 467 JQ, south of the Marikana Town, in the North West Province.

Mining is undertaken in two mining sections, namely the East Mine and West Mine, using conventional open pit truck and shovel methods. The two mining sections are separated by the perennial Sterkstroom River and the D1325 (Marikana Road). Waste rock from the open pit areas is stockpiled on Waste Rock Dumps (WRDs) and some in-pit dumping of waste rock has taken place at the East Mine. Key existing mine infrastructure includes haul roads, run-of-mine, a concentrator complex, various product stockpiles, topsoil stockpiles, WRDs, tailings storage facilities (TSFs) and supporting infrastructure such as offices, workshops, change house and access control facilities.

Tharisa holds the following environmental authorisations (EAs) and licenses:

- A Mining Right (MR) (Reference No.: 358 MR) issued by the Department of Minerals and Energy (DME) (currently the Department of Mineral Resources and Energy (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 DME (currently the DMRE) on 19 September 2008;
- An EA (Ref No.: NWP/EIA/159/2007) issued by the Northwest Department of Agriculture, Conservation and Environment (DACE) (currently 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 Environmental Affairs on 15 November 2012;
- An EA (Ref No.: NWP/EIA/50/2011) issued by the Northwest DACE (currently 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 Department of Mineral Resources (DMR) (currently 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 DMR (currently the DMRE) on 14 Aug 2020 - Waste Water Treatment Plant;
- An addendum to the EIA and EMPr (Ref No.: NW/30/5/1/2/3/2/1/358EM) issued by the DMR (currently the DMRE) on 08 Aug 2021 – Fuel & 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 AUG 2021; and
- An amended Integrated Water Use Licence (IWUL) (Licence No. 03/A21K/ABCGIJ/1468) issued by the Department of Water and Sanitation (DWS) in November 2020.

As part of its on-going mine planning, Tharisa has identified the need for additional waste rock storage on site (referred to as the Proposed Project). In this regard, Tharisa is making an application to the Department of Mineral Resources and Energy (DMRE) for an integrated EA and update of the mine's current EMPr. The following activities are now proposed:

- The expansion of the existing and approved Far West WRD 1 by a footprint of 109 ha. The expanded area will be referred to as the West Above Ground (OG) WRD. Portions of the West OG WRD will be located on backfilled areas of the West Pit; and
- The establishment of a waste rock dump (referred to as the East OG WRD) on backfilled portions of the East Pit. The proposed East OG WRD will cover an area of approximately 72 ha.

SUMMARY OF AUTHORISATION REQUIREMENTS AND ENVIRONMENTAL PROCESS

The Proposed Project will require an integrated EA and an amendment to Tharisa's current EMPr. The Proposed Project includes listed activities under the NEMA EIA Regulations, 2014 (published under Government Notice Regulation (GNR) 982 of 4 December 2014, as amended), (hereafter referred to as EIA Regulations, 2014 (as amended)), and waste management activities listed under the National Environmental Management Waste Act, 59 of 2008 (NEM:WA). Under both the EIA Regulations, 2014 (as amended) and the NEM:WA, listed activities are prohibited from commencing until written authorisation is obtained from the competent authority, which in this case is the North West Province office of the DMRE. The project requires an integrated EA in terms of Section 24 of NEMA and Section 45 of NEM:WA from the North West Province office of the DMRE. In terms of the Section 102 of the MPRDA, an EMPr may not be amended or varied without the written consent of the Minister of Mineral Resources.

The MPRDA, NEMA and NEM:WA require that an applicant submit the relevant environmental reports required in terms of NEMA. The EIA Regulations, 2014 (as amended) promulgated in terms of NEMA set out the assessment process and reporting requirements where authorisation is required. Prior to the commencement of the Proposed Project the following is required:

- An amended EMPr in terms of Section 102 of the MPRDA from the Department of Mineral Resources and Energy (DMRE);
- An EA in terms of the NEMA for activities in Listing Notice 1 (GNR 983 of 2014) and Listing Notice 3 (GNR 985 of 2014), as amended, from the DMRE. The EIA Regulations being followed are Government Notice Regulation (GNR) 982 of 4 December 2014, as amended. Listed activities triggered as a result of the project are outlined in Section 4.1.; and
- A Waste Management Licence in terms of the National Environmental Management: Waste Act, 59 of 2008 (NEM:WA) for waste activities in Category B (GNR 921 of 2013), as amended.

A Scoping and Environmental Impact Assessment (S&EIA) process is required to inform the Proposed Project and meet regulatory requirements listed above. The project is currently in the Scoping phase of the project.

In addition, the Proposed Project also requires authorisation from the Department Water and Sanitation (DWS) for specific water uses listed under Section 21 of the NWA. This Report does not address the requirements of a water use licensing process. This will be handled as part of a separate process with the DWS.

SLR Consulting (South Africa) (Pty) Ltd (SLR), an independent firm of environmental assessment practitioners (EAPs), has been appointed by Tharisa to manage the S&EIA process for the Proposed Project.

This S&EIA process does not address occupational health and safety legislative requirements.

PROJECT ALTERNATIVES

The Tharisa Mining Right boundary has significant space constraints due to the existing infrastructure. Tharisa Mine is also bordered by other mining companies (Western Platinum Mine, Marikana Platinum Mine and Samancor) 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. As such the location of the additional WRDs 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 and over backfilled portions of the pits. It follows that no location alternatives for the Proposed Project could be considered (or were possible).

The following technology/ activity alternatives were considered as part of the Proposed Project. These includes the following:

- **Trucking waste rock to a different location:** Open pit mining consists primarily of the removal of topsoil and overburden, drilling and blasting of ore, and the transportation of waste rock by haul trucks. Transportation of waste rock is cyclic in nature and requires the dispatch of a large number of trucks per month. Reducing the cycle time for transportation of waste rock results in increased productivity and reduces the operational costs. The proximity of the Proposed Project to the open pits allows for increased productivity, minimisation of transportation costs as well as minimisation of noise and traffic impacts associated with transportation of waste rock;
- **Alternative mining technique (underground mining):** Underground mining is used to extract ore from below the surface of the earth safely, economically and with as little waste as possible. Underground mining is practical when the ore body is too deep to mine profitably by open pit. The target ore body for underground mining has not been reached for Tharisa, as such underground mining, as an alternative mining technique is not considered feasible; and
- **Waste rock backfill of open pits:** Tharisa has approval for partial backfilling of the open pits with waste rock, this is currently undertaken concurrently with mining. The waste rock backfill of open pits at Tharisa mine has reached its maximum capacity.

It follows that no activity/technology alternative have been considered for the Proposed Project.

PUBLIC PARTICIPATION COMPLETED TO DATE

The public participation process was initiated in 2021. The public participation completed to date has been aimed at the identification of Interested and Affected Parties (I&AP) and informing I&APs about the Proposed Project. Informing I&APs about the Proposed Project has been done through the dissemination of information sharing material (advertisements, site notices, flyers, and background information document (BID)) and through focussed and public meetings. I&APs will continue to be involved throughout the environmental authorisation process.

OPPORTUNITY TO COMMENT ON THE SCOPING REPORT

This Scoping Report has been distributed for a 30-day comment period from **18 May to 17 June 2022** in order to provide Interested and Affected Parties (I&APs) with an opportunity to comment on any aspect of the project and the findings of the S&EIA process to date. Copies of the full report and Non-Technical Summary (NTS) are available on the SLR website (at <https://www.slrconsulting.com/en/public-documents/tharisa>) and the SLR data-free website (at <https://slrpublicdocs.datafree.co/public-documents/tharisa>). Electronic copies (in the form of a compact disk) of the report are available from SLR, at the contact details provided below. Please send your comments to SLR at the address, telephone number or e-mail address shown below by no later than **17 June 2022** for them to be included in the updated Scoping Report. All comments received during the review process will be included in the Scoping Report. The updated Scoping Report will be made available to the DMRE for decision-making purposes.

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CHANGES TO THE PROJECT DESCRIPTION SINCE THE INITIATION OF THE PUBLIC PARTICIPATION PROCESS

Since the initiation of the public participation process towards the end of 2021, there have been several changes to the Proposed Project description. In this regard, public participation material distributed to date, has also referred to the establishment of West WRD 2, the increase in the height of existing TSF's through a self-raise and establishment of a new tailings dam (referred to as TSF 3). It is important to note, that these project components no longer form part of this environmental authorisation process. The design work and planning for these project components needs to be further progressed before Tharisa is in a position to initiate an environmental authorisation process for these components. Going forward, this environmental authorisation process only focusses on the establishment of the West OG WRD and the East OG WRD.

PLAN OF STUDY FOR THE EIA PHASE

The Plan of Study for EIA describes the nature and extent of the assessment to be conducted and sets out the proposed approach to the EIA phase. In this regard, upon acceptance of the Scoping Report by the DMRE, the EIA phase of the project will commence, and the following key steps will be undertaken:

- I&APs will be informed of the DMRE's decision in respect to the Scoping Report;
- I&APs will be provided with an opportunity to comment on any aspect of the project and the findings the EIA and EMPr;
- An assessment of the potential biophysical, cultural and socio-economic impacts of the project will be undertaken. The assessment will be informed by specialist and project team input and comments and concerns received from I&APs during the authorisation process. Mitigation and management measures to reduce potential negative impacts, and enhance positive impacts will be included as part of the findings of the EIA and EMPr;

- The EIA and EMPr will be made available for the public, the competent authority, and other relevant stakeholders during a review period comprising 30 calendar days;
- The EIA and EMPr will be updated with any comments raised during the review period and will be made available to the DMRE for decision making purposes; and
- I&APs will be informed of the DMRE's decision.

CONTENTS

| | |
|--|-----------|
| EXECUTIVE SUMMARY | I |
| INTRODUCTION | 1 |
| 1 DETAILS OF THE EAP WHO PREPARED THE REPORT | 10 |
| 1.1 CONTACT PERSON AND CORRESPONDENCE ADDRESS | 10 |
| 1.2 QUALIFICATIONS AND EXPERIENCE OF THE EAP | 10 |
| 2 DESCRIPTION AND LOCATION OF ACTIVITY | 11 |
| 3 LOCALITY PLAN | 13 |
| 4 DESCRIPTION OF THE SCOPE OF THE ACTIVITY | 14 |
| 4.1 LISTED AND SPECIFIED ACTIVITIES | 14 |
| 4.2 DESCRIPTION OF ACTIVITIES | 18 |
| 4.2.1 OVERVIEW OF EXISTING MINING AND PROCESSING OPERATIONS..... | 18 |
| 4.2.2 EXISTING AND PENDING WRD'S AT THARISA | 23 |
| 4.2.3 DESCRIPTION OF PROPOSED PROJECT | 23 |
| 4.2.3.1 OVERVIEW OF PROPOSED PROJECT..... | 23 |
| 4.2.3.2 PROPOSED WASTE ROCK DUMPS..... | 24 |
| 5 POLICY AND LEGISLATIVE CONTEXT | 31 |
| 5.1 LEGISLATION CONSIDERED IN THE PREPARATION OF THE SCOPING REPORT | 31 |
| 5.1.1 MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT (No. 28 OF 2002) (MPRDA), AS AMENDED..... | 32 |
| 5.1.1.1 MPRDA REGULATIONS (No. 527 OF 2004), AS AMENDED..... | 32 |
| 5.1.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (No. 107 OF 1998) (NEMA), AS AMENDED | 32 |
| 5.1.2.1 EIA REGULATIONS (No. 982 OF 2014), AS AMENDED..... | 33 |
| 5.1.2.2 REGULATIONS PERTAINING TO THE FINANCIAL PROVISION FOR PROSPECTING, EXPLORATION, MINING OR PRODUCTION OPERATIONS, 2015 | 33 |
| 5.1.3 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT (No. 59 OF 2008) (NEM:WA) | 34 |
| 5.1.3.1 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. | 34 |
| 5.1.4 NATIONAL WATER ACT (No. 36 OF 1998) (NWA) | 34 |
| 5.1.4.1 REGULATIONS ON THE USE OF WATER FOR MINING AND RELATED ACTIVITIES, 1999 | 35 |
| 5.1.5 NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT (No. 34 OF 2004) (NEM:AQA), AS AMENDED | 35 |
| 5.1.5.1 LISTED ACTIVITIES AND MINIMUM EMISSION STANDARDS | 35 |
| 5.1.5.2 NATIONAL DUST CONTROL REGULATIONS, 2013 (GN 827 OF 2013) (NDCR) | 35 |
| 5.1.5.3 NEM: AQA WATERBERG BOJANALA PRIORITY AREA AIR QUALITY MANAGEMENT PLAN, 2015 (GN 1207)..... | 36 |
| 5.1.6 NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT (No. 10 OF 2004) (NEM:BA) | 36 |
| 5.1.6.1 ALIEN AND INVASIVE SPECIES REGULATIONS, 2014 AND LISTS | 36 |
| 5.1.7 CONSERVATION OF AGRICULTURAL RESOURCES ACT (No. 43 OF 1983) (CARA) | 37 |
| 5.1.8 NATIONAL FORESTS ACT (No. 84 OF 1998) (NFA) | 37 |
| 5.1.9 NATIONAL HERITAGE RESOURCES ACT (No. 25 OF 1999) (NHRA) | 37 |
| 5.2 GUIDELINES, POLICIES, PLANS AND FRAMEWORKS | 38 |
| 6 NEED AND DESIRABILITY | 40 |
| 6.1 BACKGROUND..... | 40 |
| 6.2 NATIONAL POLICY AND PLANNING FRAMEWORK | 40 |
| 6.2.1 NATIONAL DEVELOPMENT PLAN 2030..... | 40 |
| 6.2.2 NEW GROWTH PATH | 41 |
| 6.3 REGIONAL AND LOCAL POLICY AND PLANNING FRAMEWORK..... | 41 |
| 6.3.1 NORTH WEST | 41 |

| | | |
|----------|--|-----------|
| 6.3.2 | BOJANALA INTEGRATED DEVELOPMENT PLAN AND SPATIAL DEVELOPMENT FRAMEWORK | 42 |
| 6.3.3 | RUSTENBURG LOCAL MUNICIPALITY | 42 |
| 6.4 | CONSISTENCY WITH POLICY AND PLANNING CONTEXT..... | 43 |
| 6.5 | CONSISTENCY WITH NEMA PRINCIPLES..... | 43 |
| 6.6 | ENSURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES..... | 46 |
| 6.7 | PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT | 47 |
| 7 | PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED | 48 |
| 8 | PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED ALTERNATIVE | 49 |
| 8.1 | ALTERNATIVES CONSIDERED | 49 |
| 8.1.1 | DETAILS OF ALTERNATIVES CONSIDERED | 49 |
| 8.1.1.1 | LAYOUT ALTERNATIVE | 49 |
| 8.1.1.2 | TECHNOLOGY/ACTIVITY ALTERNATIVES | 49 |
| 8.1.2 | THE “NO-GO” ALTERNATIVE..... | 50 |
| 8.2 | DETAILS OF THE PUBLIC PARTICIPATION PROCESS..... | 51 |
| 8.3 | SUMMARY OF ISSUES RAISED BY I&APs..... | 55 |
| 8.4 | ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE SITE..... | 98 |
| 8.4.1 | BASLINE BIOPHYSICAL ENVIRONMENT AFFECTED BY THE PROPOSED PROJECT..... | 98 |
| 8.4.1.1 | GEOLOGY | 98 |
| 8.4.1.2 | TOPOGRAPHY | 102 |
| 8.4.1.3 | CLIMATIC CONDITIONS | 103 |
| 8.4.1.4 | SOILS AND LAND CAPABILITY | 108 |
| 8.4.1.5 | BIODIVERSITY | 109 |
| 8.4.1.6 | SURFACE WATER | 118 |
| 8.4.1.7 | GROUNDWATER..... | 123 |
| 8.4.1.8 | AIR QUALITY | 127 |
| 8.4.1.9 | NOISE | 131 |
| 8.4.1.10 | VISUAL ASPECTS | 132 |
| 8.4.2 | BASLINE CULTURAL ENVIRONMENT AFFECTED BY THE PROPOSED PROJECT..... | 134 |
| 8.4.2.1 | HERITAGE / CULTURAL AND PALAEOLOGICAL RESOURCES..... | 134 |
| 8.4.3 | BASLINE SOCIO-ECONOMIC ENVIRONMENT AFFECTED BY THE PROPOSED PROJECT | 137 |
| 8.4.3.1 | SOCIO-ECONOMIC..... | 137 |
| 8.4.3.2 | TRAFFIC..... | 138 |
| 8.4.3.3 | CURRENT LAND USES..... | 139 |
| 8.4.4 | DESCRIPTION OF SPECIFIC ENVIRONMENTAL FEATURES AND INFRASTRUCTURE ON THE SITE | 145 |
| 8.4.5 | ENVIRONMENT AND CURRENT LAND USE MAP | 146 |
| 8.5 | IMPACTS AND RISKS WHICH HAVE INFORMED THE IDENTIFICATION OF EACH ALTERNATIVE | 147 |
| 8.6 | METHODOLOGY USED IN DETERMINING THE SIGNIFICANCE OF ENVIRONMENTAL IMPACTS | 147 |
| 8.7 | POSITIVE AND NEGATIVE IMPACTS OF THE PROPOSED ACTIVITY AND ALTERNATIVES | 149 |
| 8.7.1 | POTENTIAL BIOPHYSICAL IMPACTS..... | 150 |
| 8.7.1.1 | ISSUE: LOSS OF SOIL AND LAND CAPABILITY THROUGH PHYSICAL DISTURBANCE..... | 150 |
| 8.7.1.2 | ISSUE: LOSS OF SOIL AND LAND CAPABILITY THROUGH CONTAMINATION | 150 |
| 8.7.1.3 | ISSUE: PHYSICAL DESTRUCTION OF BIODIVERSITY..... | 151 |
| 8.7.1.4 | ISSUE: GENERAL DISTURBANCE OF BIODIVERSITY | 152 |
| 8.7.1.5 | ISSUE: CONTAMINATION OF SURFACE WATER RESOURCES AFFECTING THIRD PARTY USE | 152 |
| 8.7.1.6 | ISSUE: ALTERATION OF NATURAL DRAINAGE PATTERNS AFFECTING FLOW OF WATER IN DOWNSTREAM SYSTEMS | 153 |
| 8.7.1.7 | ISSUE: CONTAMINATION OF GROUNDWATER AFFECTING THIRD PARTY USE..... | 154 |
| 8.7.1.8 | ISSUE: INCREASE IN AMBIENT AIR CONCENTRATIONS..... | 154 |

| | | |
|-----------|---|------------|
| 8.7.1.9 | ISSUE: INCREASE IN DISTURBING NOISE LEVELS AFFECTING POTENTIAL HUMAN RECEPTORS | 155 |
| 8.7.2 | POTENTIAL CULTURAL IMPACTS | 156 |
| 8.7.2.1 | ISSUE: LOSS OR DAMAGE TO HERITAGE AND/OR PALEONTOLOGICAL RESOURCES | 156 |
| 8.7.3 | POTENTIAL SOCIO-ECONOMIC IMPACTS | 157 |
| 8.7.3.1 | ISSUE: DISTURBANCE TO THIRD PARTY ROAD USERS BY PROJECT RELATED TRAFFIC..... | 157 |
| 8.7.3.2 | ISSUE: ALTERATION OF THE VISUAL ENVIRONMENT AFFECTING SENSE OF PLACE..... | 157 |
| 8.7.3.3 | ISSUE: POSITIVE AND NEGATIVE SOCIO-ECONOMIC IMPACT | 158 |
| 8.7.3.4 | ISSUE: HAZARDOUS EXCAVATIONS AND INFRASTRUCTURE THAT POSE A SAFETY RISK TO THIRD PARTIES AND ANIMALS..... | 159 |
| 8.7.3.5 | ISSUE: STERILISATION OF A MINERAL RESOURCE..... | 159 |
| 8.7.3.6 | ISSUE: CHANGE IN CURRENT LAND USE | 160 |
| 8.8 | POSSIBLE MITIGATION MEASURES THAT COULD BE APPLIED AND THE LEVEL OF RISK..... | 161 |
| 8.9 | OUTCOME OF THE SITE SELECTION MATRIX | 163 |
| 8.10 | MOTIVATION WHERE NO ALTERNATIVE SITES WERE CONSIDERED | 163 |
| 8.11 | THE PREFERRED ALTERNATIVE..... | 163 |
| 9 | PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESSMENT | 164 |
| 9.1 | EIA OBJECTIVES..... | 164 |
| 9.2 | ALTERNATIVES TO BE CONSIDERED | 164 |
| 9.3 | ASPECTS TO BE ASSESSED QUALITATIVELY | 164 |
| 9.4 | ASPECTS TO BE ASSESSED BY SPECIALISTS | 165 |
| 9.5 | METHOD OF ASSESSING THE ENVIRONMENTAL ASPECTS INCLUDING ALTERNATIVES | 167 |
| 9.6 | METHOD OF ASSESSING IMPACT SIGNIFICANCE..... | 167 |
| 9.7 | CONSULTATION WITH THE COMPETENT AUTHORITY | 167 |
| 9.8 | PUBLIC PARTICIPATION PROCESS IN THE EIA | 168 |
| 9.8.1 | NOTIFICATION OF INTERESTED AND AFFECTED PARTIES | 168 |
| 9.8.2 | DETAILS OF THE PUBLIC PARTICIPATION PROCESS TO BE FOLLOWED..... | 168 |
| 9.8.3 | INFORMATION TO BE PROVIDED TO INTERESTED AND AFFECTED PARTIES..... | 169 |
| 9.9 | TASKS TO BE UNDERTAKEN DURING THE EIA PHASE..... | 169 |
| 9.10 | MEASURES TO AVOID, REVERSE, MITIGATE, OR MANAGE IDENTIFIED IMPACTS..... | 170 |
| 10 | OTHER INFORMATION REQUIRED BY THE COMPETENT AUTHORITY | 171 |
| 10.1 | DFFE SCREENING TOOL..... | 171 |
| 11 | OTHER MATTERS REQUIRED IN TERMS OF SECTIONS 24(4)(A) & (B) OF THE ACT | 172 |
| 12 | UNDERTAKING BY THE EAP | 173 |
| 13 | REFERENCES | 174 |

LIST OF TABLES

| | |
|---|----|
| TABLE 1-1: STRUCTURE OF THE SCOPING REPORT..... | 6 |
| TABLE 1-1: DETAILS OF THE EAP..... | 10 |
| TABLE 2-1: DESCRIPTION OF THE PROPERTY | 11 |
| TABLE 4-1: PROPOSED PROJECT ACTIVITIES AND ASSOCIATED LISTED ACTIVITIES | 15 |
| TABLE 4-2: MINING AND PROCESSING RELATED ACTIVITIES AT THARISA (SLR, 2014; METAGO, 2008)..... | 19 |
| TABLE 4-3: LEACHATE WASTER ROCK DATA SCREENING RESULTS | 25 |
| TABLE 4-4: DESIGN FEATURES OF THE WRD'S | 28 |
| TABLE 5-1: LEGAL FRAMEWORK..... | 31 |
| TABLE 5-2: GUIDELINE AND POLICY FRAMEWORK..... | 38 |
| TABLE 6-1: CONSIDERATION OF THE NEMA PRINCIPLES IN RELATION TO THE PROPOSED PROJECT..... | 43 |

| | |
|--|-----|
| TABLE 8-1: OVERVIEW OF THE PUBLIC PARTICIPATION PROCESS..... | 52 |
| TABLE 8-2: SUMMARY OF ISSUES RAISED BY I&APS AND COMMENTING AUTHORITIES | 55 |
| TABLE 8-3: ALIEN AND INVASIVE SPECIES IDENTIFIED IN THE THARISA MINING RIGHT AREA (SLR, 2014)..... | 112 |
| TABLE 8-5: FLOOD PEAKS AND VOLUME FOR STERKSTROOM AND ELANDRIFTSPRUIT TRIBUTARY (SLR, 2014) | 120 |
| TABLE 8-6: DUST FALLOUT MONITORING RESULTS (AQUATICO, JANUARY 2022A; AQUATICO, FEBRUARY 2022B; AQUATICO, MARCH 2022C) | 128 |
| TABLE 8-7: SURFACE RIGHTS WITHIN THE PROPOSED PROJECT AREA | 139 |
| TABLE 8-8: LAND USE WITHIN THE PROPOSED PROJECT AREAS..... | 140 |
| TABLE 8-9: KEY NOTICEABLE ENVIRONMENTAL FEATURES ASSOCIATE WITH EACH PROPOSED COMPONENT | 145 |
| TABLE 8-10: SLR IMPACT ASSESSMENT METHODOLOGY | 147 |
| TABLE 8-11: POSSIBLE MANAGEMENT ACTIONS AND THE ANTICIPATED LEVEL OF RISK | 161 |
| TABLE 9-1: PLAN OF STUDY FOR ASPECTS TO BE ASSESSED BY SPECIALISTS | 165 |
| TABLE 9-2: DETAILS OF THE PUBLIC PARTICIPATION PROCESS TO BE FOLLOWED DURING THE EIA PHASE | 168 |
| TABLE 9-3: EIA TASKS AND TIMING | 170 |
| TABLE 10-1: DEA SCREENING TOOL RESULTS | 171 |

LIST OF FIGURES

| | |
|--|-----|
| FIGURE 1: REGIONAL SETTING | 2 |
| FIGURE 2: LOCAL SETTING | 3 |
| FIGURE 3: CONCEPTUAL PROCESS OVERVIEW OF CURRENT OPERATIONS..... | 22 |
| FIGURE 4: CLASS D LINER REQUIREMENTS..... | 27 |
| FIGURE 5: SITE LAYOUT | 30 |
| FIGURE 6: STRATIGRAPHY OF THE REGIONAL GEOLOGY..... | 99 |
| FIGURE 7: MAP OF THE WESTERN BIC SHOWING THE LOCATION OF THE THARISA MINE | 101 |
| FIGURE 8: AVERAGE MONTHLY RAINFALL | 104 |
| FIGURE 9: DAILY ANNUAL MAXIMUM RAINFALL DEPTHS FOR ANALYSED RAINFALL..... | 104 |
| FIGURE 10: WIND ROSES AND WIND SPEED FREQUENCY DISTRIBUTION: ALL HOURS, DAY TIME AND NIGHT-TIME..... | 106 |
| FIGURE 11: WIND ROSES AND WIND SPEED FREQUENCY DISTRIBUTION: WINTER AND SUMMER..... | 107 |
| FIGURE 12: VEGETATION TYPES..... | 111 |
| FIGURE 13: MINING BIODIVERSITY GUIDELINES..... | 116 |
| FIGURE 14: CRITICAL BIODIVERSITY AREAS | 117 |
| FIGURE 15: HYDROLOGY | 121 |
| FIGURE 16: SURFACE WATER MONITORING (AQUATICO, MARCH 2022) | 122 |
| FIGURE 17: GROUNDWATER MONITORING (AQUATICO, SEPTEMBER 2021)..... | 126 |
| FIGURE 18: MAXIMUM 24-HOUR PM ₁₀ CONCENTRATIONS (99TH PERCENTILE) WITH THE NAAQS GUIDELINE AT 75 µG/M ³ (LTD, 2019) | 129 |
| FIGURE 19: DUST FALLOUT MONITORING POINTS..... | 130 |
| FIGURE 20: HERITAGE RESOURCES..... | 136 |
| FIGURE 21: REGIONAL LAND USE MAP | 143 |
| FIGURE 22: LOCAL LAND USE MAP..... | 144 |

APPENDICES

| | |
|---|-----|
| APPENDIX A: EXISTING AUTHORISATIONS | 175 |
| APPENDIX B: EAP QUALIFICATIONS | 176 |
| APPENDIX C: PUBLIC PARTICIPATION RECORD | 177 |

ACRONYMS AND ABBREVIATIONS

| Acronym / Abbreviation | Definition |
|-----------------------------------|--|
| AEL | Atmospheric Emissions Licence, i.t.o. NEM:AQA |
| AQIA | Air Quality Impact Assessment |
| AQMP | Air Quality Management Plan |
| BIC | Bushveld Igneous Complex |
| BID | Background Information Document |
| BMR | Base Metals Refinery |
| CARA | Conservation of Agricultural Resources Act, 43 of 1983 |
| CBA | Critical Biodiversity Area |
| CEC | Cation Exchange Capacity |
| DACE | North West Department of Agriculture, Conservation and Environment |
| DEDECT | North West Department of Economic Development, Environment, Conservation and Tourism |
| DFFE | Department of Environment, Forestry and Fisheries (formerly Department of Environmental Affairs (DEA)) |
| DWS | Department of Water and Sanitation |
| DME | Department of Minerals and Energy |
| DMR | Department of Mineral Resources |
| DMRE | Department of Mineral Resources and Energy |
| DWS | Department of Water and Sanitation |
| EA | Environmental Authorisation, i.t.o. NEMA |
| EAP | Environmental Assessment Practitioner |
| EAPASA | Environmental Assessment Practitioners Association of South Africa |
| EC | Electrical Conductivity |
| ECA | Environment Conservation Act, 1989 (No. 73 of 1989) |
| EIA | Environmental Impact Assessment |
| EIA Regulations, 2014, as amended | Environmental Impact Assessment Regulations, 2014 (GN R 982 of 2014, as amended by GN R 326 of 2017) |
| EMPr | Environmental Management Programme |
| ESA | Ecological Support Areas |
| GDP | Gross Domestic Product |
| GN | Government Notice |
| GVA | Gross Value Added |
| HC | Hydrocarbon |
| HIA | Heritage Impact Assessment |
| I&AP | Interested and Affected Party |

| Acronym / Abbreviation | Definition |
|------------------------|---|
| IAIAsa | International Association for Impact Assessment South Africa |
| IDP | Integrated Development Plan |
| IEM | Integrated Environmental Management |
| IFC | International Finance Corporation |
| IWUL | Integrated Water Use Licence |
| IWULA | Integrated Water Use Licence Application |
| IWWMP | Integrated Wastewater and Water Management Plan |
| Listing Notice 1, 2014 | Environmental Impact Assessment Regulations Listing Notice 1, 2014 (GN R 983 of 2014, as amended by GN R 327 of 2017) |
| Listing Notice 2, 2014 | Environmental Impact Assessment Regulations Listing Notice 2, 2014 (GN R 984 of 2014, as amended by GN R 325 of 2017) |
| Listing Notice 3, 2014 | Environmental Impact Assessment Regulations Listing Notice 3, 2014 (GN R 985 of 2014, as amended by GN R 324 of 2017) |
| mamsl | Metres Above Mean Sea Level |
| MPRDA | Minerals and Petroleum Resources Development Act, 28 of 2002 |
| MQF | Magaliesberg Quartzite Formation |
| NAAQS | National Ambient Air Quality Standard |
| NDCR | National Dust Control Regulations, 2013 |
| NDP | National Development Plan 2030 |
| NEMA | National Environmental Management Act, 107 of 1998 |
| NEM: AQA | National Environmental Management: Air Quality Act, 57 of 2003 |
| NEM: BA | National Environmental Management: Biodiversity Act, 10 of 2004 |
| NEM:WA | National Environmental Management: Waste Act, 59 of 2008 |
| NFA | National Forest Act, 84 of 1998 |
| NFEPA | National Freshwater Ecosystem Priority Areas, 2011 |
| NGP | New Growth Path (2011) |
| NHRA | National Heritage Resources Act, 25 of 1999 |
| NPAES | National Protected Areas Expansion Strategy, 2008 |
| NTS | Non-Technical Summary |
| NWA | National Water Act, 36 of 1998 |
| PAH | Polycyclic Aromatic Hydrocarbon |
| PGM | Platinum Group Metals |
| PM | Particulate Matter |
| PMR | Precious Metals Refinery |
| Pr. Sci. Nat. | Professional Natural Scientist |
| PSDF | Provincial Spatial Development Framework |
| GDS | Quarter Degree Squares |

| Acronym / Abbreviation | Definition |
|------------------------|---|
| RE | Remaining Extent |
| RLS | Rustenburg Layered Suite |
| RMF | Regional Maximum Flood |
| ROM | Run of Mine |
| S&EIA | Scoping and Environmental Impact Assessment |
| SACAD | South African Conservation Areas Database, 2017 |
| SAHRA | South African Heritage Resources Agency |
| SAHRIS | South African Heritage Resource Information System |
| SAMRAD | South African Mineral Resources Administrative System |
| SANBI | South African National Biodiversity Institute |
| SANS | South African National Standards |
| SAWS | South African Weather Services |
| SCC | Species of Conservation Concern |
| SDF | Spatial Development Framework |
| SG | Surveyor General |
| SLR | SLR Consulting (South Africa) (Pty) Ltd |
| SVOC | Semi-volatile Organic Compound |
| TDS | Total Dissolved Solids |
| Tharisa | Tharisa Minerals (Pty) Ltd |
| TSF | Tailings Storage Facility |
| VOC | Volatile Organic Compound |
| WBPA | Waterberg-Bojanala Priority Area |
| WHO | World Health Organization |
| WRD | Waste Rock Dump |
| WUL | Water Use Licence, i.t.o. NWA |
| WULA | Water Use Licence Application |

INTRODUCTION

This Section provides a brief description of the project background, summarises the legislative authorisation requirements, provides the study terms of reference, describes the structure and purpose of the report, and outlines the opportunity for comment.

PROJECT BACKGROUND

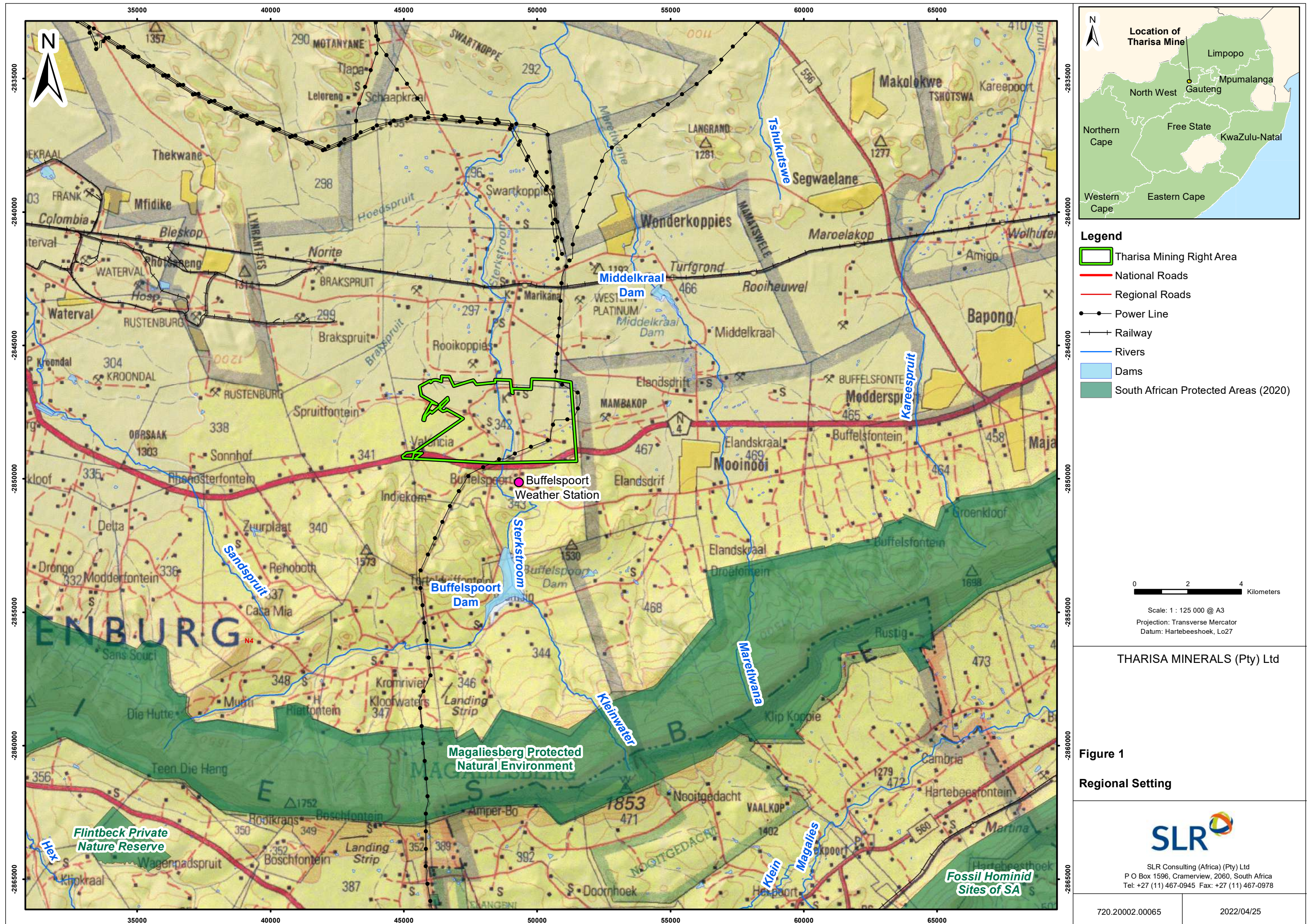
Tharisa is an opencast mining operation that produces chrome and PGMs concentrates. The mine has been operational since 2008. The opencast mine is located on farms 342 JQ and Elandsdrift 467 JQ, south of the Marikana Town, in the North West Province of South Africa (see Figure 1 and Figure 2 for regional and local setting maps, respectively).

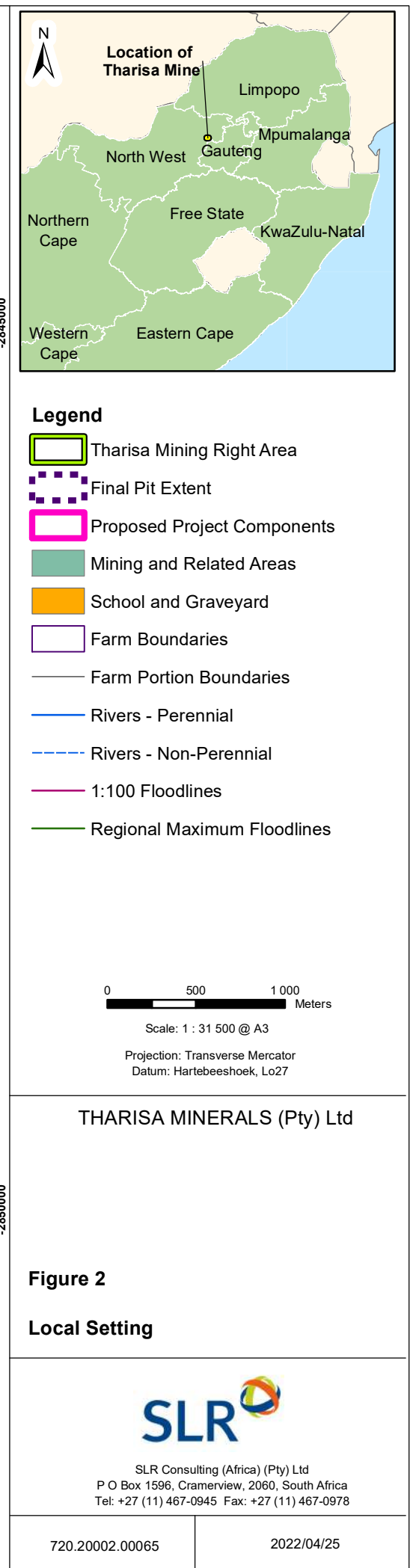
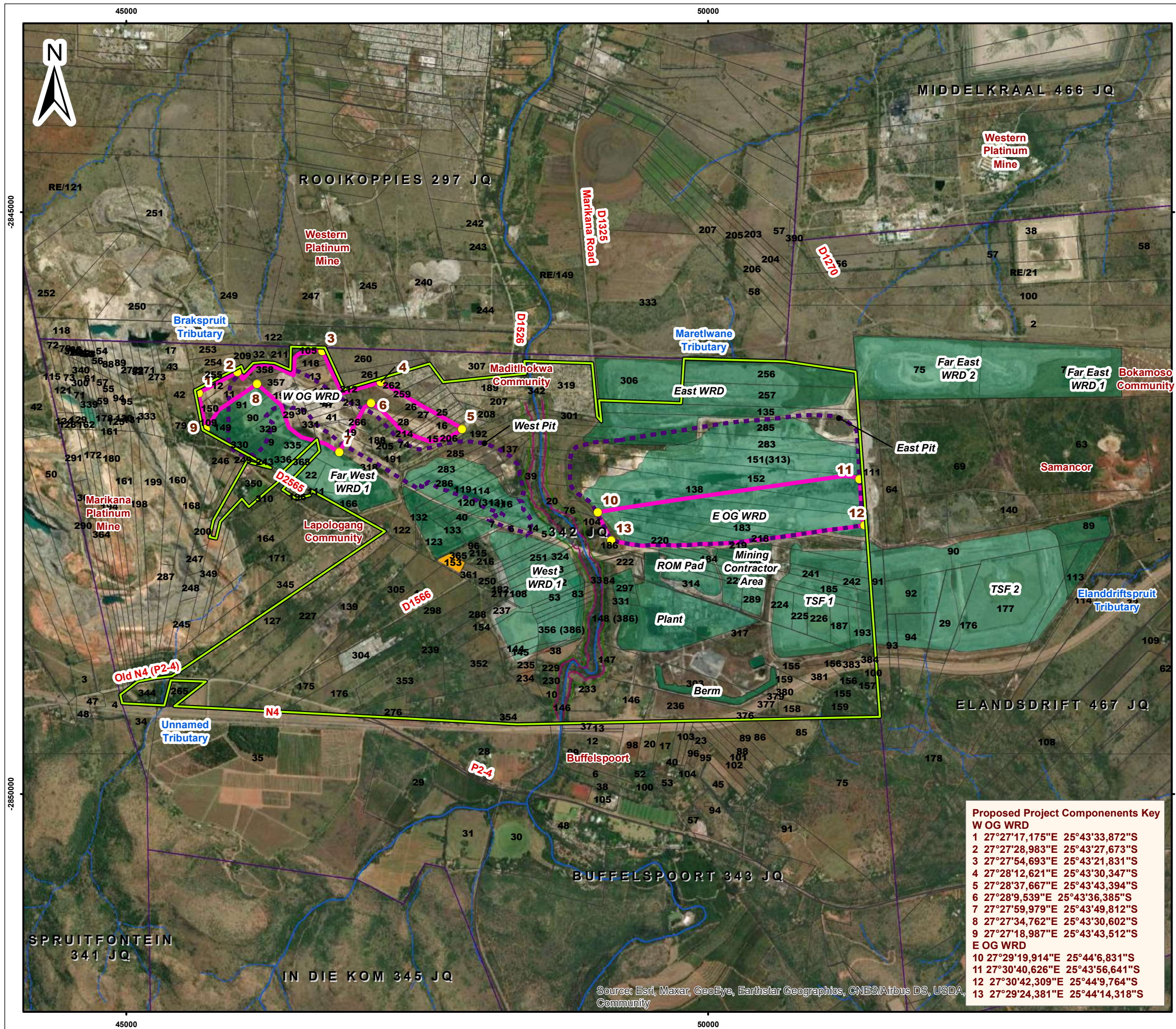
Mining is undertaken in two sections, namely the East Mine and West Mine, using conventional open pit truck and shovel methods. The two mining sections are separated by the perennial Sterkstroom River and the D1325 (Marikana Road). Waste rock from the open pit areas is stockpiled on WRDs. Some in-pit dumping of waste rock has taken place at the East mine. Key existing mine infrastructure includes haul roads, run-of-mine, a concentrator complex, various product stockpiles, topsoil stockpiles, WRDs, TSFs and supporting infrastructure such as offices, workshops, change house and access control facilities.

Tharisa holds existing EAs and licenses under the MPRDA, the NEMA and the NWA. Tharisa holds an EIA and EMPr approved in terms of the MPRDA and the NEMA in 2008 (Metago, 2008). The approved EMPr for Tharisa Mine was amended in 2014 (SLR, 2014) to cater for changes to the pit, TSF and WRD's; a chrome sand drying plant and other operational and surface infrastructure changes. The mine also holds an amended IWUL approved in terms of the NWA. Copies of the approved authorisations are included in Appendix A.

As part of on-going mine planning, Tharisa has identified the need for additional waste rock storage on site (referred to as the Proposed Project). In this regard, Tharisa is making an application to the DMRE for an integrated EA and update of the mine's EMPr and is proposing the following:

- The expansion of the existing and approved Far West WRD 1 by a footprint of 109 ha. The expanded area will be referred to as the West Above Ground (OG) WRD. Portions of the West OG WRD will be located on backfilled areas of the West Pit; and
- The establishment of a waste rock dump (referred to as the East OG WRD) on backfilled portions of the East Pit. The proposed East OG WRD will cover an area of approximately 72 ha.





SUMMARY OF AUTHORISATION REQUIREMENTS

The Proposed Project will require an integrated EA and an amendment to Tharisa's current EMPr. The project includes activities listed under the NEMA EIA Regulations, 2014 (as amended) and waste management activities listed under the NEM:WA. Under both NEMA and NEM:WA, listed activities are prohibited from commencing until written authorisation is obtained from the competent authority, which in this case is the North West Province office of the DMRE. The project requires an integrated EA in terms of Section 24 of NEMA and Section 45 of NEM:WA from the North West Province office of the DMRE. In terms of the Section 102 of the MPRDA, an EMPr may not be amended or varied without the written consent of the Minister of Mineral Resources.

The MPRDA, NEMA and NEM:WA require that an applicant submit the relevant environmental reports required in terms of NEMA. The EIA Regulations, 2014 (as amended) promulgated in terms of NEMA set out the assessment process and reporting requirements where authorisation is required. Prior to the commencement of the Proposed Project the following is required:

- An amended EMPr in terms of Section 102 of the MPRDA from the DMRE;
- An EA in terms of the NEMA for activities in Listing Notice 1 (GNR 983 of 2014) and Notice 2 (GNR 984 of 2014) and Listing Notice 3 (GNR of 2014), as amended, from the DMRE. The EIA Regulations being followed are Government Notice Regulation (GNR) 982 of 4 December 2014, as amended. Listed activities triggered as a result of the project are outlined in Section 4.1.; and
- A Waste Management Licence in terms of the NEM:WA for waste activities in Category B (GNR 921 of 2013), as amended.

In addition, the Proposed Project also requires authorisation from the DWS for specific water uses listed under Section 21 of the NWA. This Report does not address the requirements of a water use licensing process. This will be handled as part of a separate process with the DWS.

SLR, an independent firm of EAPs, has been appointed by Tharisa to manage the S&EIA process required to inform the Proposed Project. This S&EIA process does not cover occupational health and safety legislative requirements.

PURPOSE OF THIS REPORT

This Scoping Report has been compiled and distributed for review and comment as part of the S&EIA process that is being undertaken for the Proposed Project at the Tharisa Mine. The S&EIA is contemplated in the EIA Regulations, 2014 (as amended) in terms of the NEMA.

This Scoping Report:

- Documents the applicable regulatory framework;
- Provides a description of the Proposed Project and the affected environment;
- Summarises the S&EIA process followed to date;
- Details the consideration of alternatives (where relevant);
- Identifies potential project impacts; and
- Presents a Plan of Study for the EIA phase.

TERMS OF REFERENCE

The environmental impact assessment process is conducted in two phases. The first is the Scoping phase and the second is the EIA phase. The terms of reference for the S&EIA regulatory process are to:

- Make application for the Proposed Project in terms of the MPRDA, NEMA and the NEM:WA;
- Ensure the S&EIA process is undertaken in accordance with the requirements of NEMA and the EIA Regulations, 2014 (as amended);
- Ensure the S&EIA is undertaken in an open, participatory manner to ensure that all potential impacts are identified;
- Undertake a public participation process, which includes the distribution of information to I&APs and provides the opportunity for I&APs to raise any concerns/issues, as well as an opportunity to comment on the S&EIA documentation; and
- Integrate all the information, including the findings of the specialist studies and other relevant information, into S&EIA reports to allow an informed decision to be taken on the Proposed Project.

Further to this and in accordance with the DMRE reporting requirements and Appendix 2 to the EIA Regulations, 2014 (as amended) the key objectives of the scoping process are to:

- Identify the policies and legislation relevant to the activity;
- Motivate the need and desirability of the proposed activity, including in the context of the preferred location;
- Identify and confirm the preferred activity, technology, and site alternatives (where relevant) through an identification of impacts and risks and an associated ranking process;
- Identify the key issues to be addressed in the assessment phase;
- Agree on the level of assessment to be undertaken in the subsequent Phase, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and
- Identify suitable measures to avoid, manage or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

STRUCTURE OF THE REPORT

This document has been prepared in accordance with the DMRE Scoping Report template format and was informed by the guidelines posted on the official DMRE website accessed in February 2021. In addition, this report also complies with the requirements of the NEMA and Appendix 2 of the EIA Regulations, 2014 (as amended).

Table 1 provides a summary of the requirements, with cross references to the report sections where these requirements have been addressed.

TABLE 1-1: STRUCTURE OF THE SCOPING REPORT

| Legal and Regulatory Requirement | | Section of Report |
|---|--|-----------------------|
| DMRE template requirement | NEMA: GNR 982 Appendix 2 | |
| - | A scoping report must contain the information that is necessary for a proper understanding of the process, informing all preferred alternatives, including location alternatives, the scope of the assessment, and the consultation process to be undertaken through the environmental impact assessment process. | See references below. |
| The EAP who prepared the report and expertise of the EAP. | Details of: <ul style="list-style-type: none"> the EAP who prepared the report; and the expertise of the EAP, including a curriculum vitae. | Section 1. |
| Description of the property. | The location of the activity, including: <ul style="list-style-type: none"> the 21-digit surveyor general code of each cadastral land parcel; where available, the physical address and farm name; and where the requirement information in terms (i) and (ii) is not available, the coordinates of the boundary of the property or properties. | Section 2. |
| Locality plan. | A plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or on land where the property has not been defined, the coordinates within which the activity is to be undertaken. | Section 3. |
| Description of the scope of the proposed overall activity, including listed and specified activities; | A description of the scope of the proposed activity: <ul style="list-style-type: none"> all listed and specified activities triggered; and a description of the activities to be undertaken, including associated structures and infrastructure. | Section 4. |
| Description of the activities to be undertaken. | | |
| Policy and legislative context. | 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 framework and instruments that are applicable to this activity and are to be considered in the assessment process. | Section 5. |
| Need and desirability of the proposed activity. | 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 6. |
| Period for which the environmental authorisation is required. | - | Section 7. |
| Description of the process followed to reach the proposed preferred site. | A full description of the process followed to reach the proposed preferred activity, site and location within the site. | Section 8. |

| Legal and Regulatory Requirement | | Section of Report |
|---|--|-------------------|
| DMRE template requirement | NEMA: GNR 982 Appendix 2 | |
| Details of the alternatives considered. | Details of all the alternatives considered. | Section 8.1. |
| Details of the public participation process followed. | Details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs. | Section 8.2. |
| Summary of issues raised by IAPs. | A summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them. | Section 8.3. |
| Environmental attributes associated with the sites. | The environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects. | Section 8.4. |
| Impacts identified. | The impacts and risks identified for each alternative, <ul style="list-style-type: none"> Including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts-can be reversed; and That may cause irreplaceable loss of resources; and can be avoided, managed or mitigated. | Section 8.5. |
| Methodology used in determining the significance of environmental impacts. | The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives. | Section 8.6. |
| The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternative will have on the environment and the community that may be affected. | 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 8.7. |
| The possible mitigation measures that could be applied and the level of risk. | The possible mitigation measures that could be applied and level of residual risk. | Section 8.8. |
| The outcome of the site selection matrix. Final site layout plan. | The outcome of the site selection matrix. | Section 8.9. |
| Motivation where no alternative sites were considered. | If no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such. | Section 8.10. |
| Statement motivating the preferred site. | A concluding statement indicating the preferred alternatives, including preferred location of the activity. | Section 8.11. |
| Plan of study for the environmental impact assess process; | A plan of study for undertaking the environmental impact assessment process to be undertaken. | Section 9. |
| Description of alternatives to be considered including the option of not going ahead with the activity | A description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity. | Section 9.2. |

| Legal and Regulatory Requirement | | Section of Report |
|--|--|-------------------|
| DMRE template requirement | NEMA: GNR 982 Appendix 2 | |
| A description of the aspects to be assessed as part of the environmental impact assessment process | A description of the aspects to be assessed as part of the environmental impact assessment process. | Section 9.3. |
| Description of aspects to be assessed by specialists. | Aspects to be assessed by specialists. | Section 9.4. |
| Proposed method of assessing the environmental aspects including the proposed method of assessing alternatives. | A description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists. | Section 9.5. |
| Proposed method of assessing duration significance. | A description of the proposed method of assessing duration and significance. | Section 9.6. |
| The stages at which the competent authority will be consulted. | An indication of the stages at which the competent authority will be consulted. | Section 9.7. |
| Particulars of the public participation process with regard to the impact assessment process that will be conducted. | Particulars of the public participation process that will be conducted during the environmental impact assessment process. | Section 9.8. |
| Description of the tasks that will be undertaken during the environmental impact assessment process. | A description of the tasks that will be undertaken as part of the environmental impact assessment process. | Section 9.9. |
| 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. | 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 9.10. |
| Other information required by the competent authority. | Where applicable, any specific information required by the competent authority. | Section 10. |
| Other matter required in terms of section 24(4)(a) and (b) of the Act. | Any other matter required in terms of section 24(4)(a) and (b) of the Act. | Section 11. |
| Undertaking regarding correctness of information; | <p>An undertaking under oath or affirmation by the EAP in relation to:</p> <ul style="list-style-type: none"> The correctness of the information provided in the report; The inclusion of comments and inputs from stakeholders and I&APs; and Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by I&APs. | Section 12. |

| Legal and Regulatory Requirement | | Section of Report |
|---|---|-------------------|
| DMRE template requirement | NEMA: GNR 982 Appendix 2 | |
| Undertaking regarding level of agreement. | An undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment. | Section 12. |

OPPORTUNITY TO COMMENT

This Scoping Report has been distributed for a 30-day comment period from **18 May 2022 to 17 June 2022** in order to provide I&APs with an opportunity to comment on any aspect of the project and the findings of the S&EIA process to date. Copies of the full report and Non-Technical Summary (NTS) are available on the SLR website (at <https://www.slrconsulting.com/en/public-documents/tharisa>) and the SLR data free website (at <https://slrpublicdocs.datafree.co/public-documents/tharisa>). Electronic copies (compact disk) of the report are available from SLR, at the contact details provided below. Please send your comments to SLR at the address, telephone number or e-mail address shown below by no later than **17 June 2022** for them to be included in the updated Scoping Report. All comments received during the review process will be included in the final Scoping Report, which will be submitted to the DMRE for consideration as part of the Proposed Project.

| |
|--|
| <p>SLR Consulting (South Africa) (Pty) Ltd Attention: Reinett Mogotshi PO Box 1596, Cramerview 2060 (if using post please call SLR to notify us of your submission) Tel: (011) 467 0945 E-mail: nsmyth@slrconsulting.com</p> |
|--|

1 DETAILS OF THE EAP WHO PREPARED THE REPORT

This Section provides the details, qualifications and experience of the EAP undertaking the S&EIA.

1.1 CONTACT PERSON AND CORRESPONDENCE ADDRESS

SLR has been appointed as the independent EAP to undertake the S&EIA for the Proposed Project. The details of the EAP project team that were involved in the preparation of this Scoping Report are provided in Table 1-1 below. The qualifications and experience of the project team are included in Appendix B.

TABLE 1-1: DETAILS OF THE EAP

| General | | |
|------------------|---|--|
| Organisation | SLR Consulting (South Africa) (Pty) Ltd | |
| Postal address | PO Box 1596, Cramerview, 2060 | |
| Tel No. | (011) 467 0945 | |
| Name | Role and Tasks | Email |
| Rob Hounsborne | Project Director - Report and process reviewer | - |
| Natasha Smyth | Project Manager - Management of the S&EIA process, including process review, specialist study review and report compilation | nsmyth@slrconsulting.com |
| Rizqah Baker | Project Assistant - Report compilation | - |
| Reinett Mogotshi | Project Consultant and Stakeholder Engagement Manager | - |

SLR has no vested interest in the Proposed Project other than contractually agreed payment for consulting services rendered as part of the S&EIA process. An undertaking by SLR declaring its independence, as required by the EIA Regulations, 2014 (as amended), is provided in Section 12.

1.2 QUALIFICATIONS AND EXPERIENCE OF THE EAP

Rob Hounsborne, the Project Director, is the Managing Director of the SLR Group of Companies in Africa. He has 28 years of wide-ranging experience in Environmental and Social advisory and consulting in 41 countries across the globe. Rob has a particular interest in advising on complex environmental and social issues in developing countries and in assessing, monitoring and managing the impacts of development directly, indirectly and cumulatively on the natural environment and people. His experience has ranged from supporting National Government and International Agencies with the development and application of customised environmental planning and assessment tools through to completing ESDD's and ESIA's in accordance with requirements of National Governments, Industry Associations, and various funding agencies including major International Finance Institutes, Equator Principle Banks, and/or PE and Legal Firms. In addition, he has completed many research and consultancy technical assignments in the fields of Climate Change and Pollution & Waste. Rob has worked extensively in the Mining, Oil & Gas, Manufacturing/Industrial and Infrastructure sectors and with finance clients.

Rob has lectured and supervised Masters-level research students at Universities in South Africa, Sweden and the U.K., has facilitated multiple Environmental capacity building programmes across Africa and has presented keynote addresses to a number of international conferences on diverse subjects such as Environmental Assessment, Climate Change, Sustainability and Waste.

Natasha Smyth, the Project Manager, holds an Honours degree in Geography and Environmental Management and has approximately 13 years of relevant experience. She has managed and assisted in a wide range of projects for major and small-scale minerals developments throughout South Africa, as well as in Namibia and Zambia. Her areas of expertise include EIAs, Environmental Compliance and Monitoring and Environmental Due Diligence. She is a member of the IAIAsa. She is also a Registered EAP with the EAPASA.

Reinett Mogotshi, the Stakeholder Engagement Manager, holds an Honours degree in Environmental Analysis and Management and has five years of experience in both public and private sectors, primarily agriculture, oil and gas, telecommunication, infrastructure, renewable energy and mining. Her focus is execution and management of environmental authorisation processes and waste management. She is a Registered Candidate Natural Scientist (Cand.Sci.Nat., Environmental Science) and is a member of the IAIAsa.

Rizqah Baker, the Project Assistant, hold an Honours degree in Environmental and Geographical Sciences and is a consultant with four years' experience working in the environmental field. She has worked in various fields including infrastructure, oil & gas, mining, and the built environment. Her area of expertise is environmental compliance auditing as an Environmental Control Officer and thus brings with her a strong understanding of, and implementation of EMPs. She is a member of the IAIAsa.

2 DESCRIPTION AND LOCATION OF ACTIVITY

This Section provides details of the project location and properties.

A description of the properties on which the Tharisa Mine and Proposed Project are located is provided in Table 2-1 below.

TABLE 2-1: DESCRIPTION OF THE PROPERTY

| Description | Details |
|-----------------------|---|
| Farm name | <ul style="list-style-type: none"> Existing mining operations - 342 JQ and Elandsdrift 467 JQ. Proposed Project - 342 JQ, within boundary of existing Mining Right Area. |
| Application area (ha) | <ul style="list-style-type: none"> The existing Mining Right Area covers an area of approximately 5 516 ha. The total application area is approximately 181 ha. Of the total application area approximately 1 ha will be located on undisturbed mining areas. The remaining application area will be located within existing disturbed areas. |
| Magisterial district | The Proposed Project is located within Bojanala District Municipality, the Rustenburg Magisterial District and the Rustenburg Local Municipality. |

| Description | Details |
|---|---|
| Distance and direction from nearest town | Tharisa Mine is located approximately 4 km to the south of Marikana Town, in the North West Province. |
| Distance and direction from nearest communities (refer to Figure 2) | <ul style="list-style-type: none"> • Bokamoso community settlement located east of the Tharisa mine. • Mmaditlhokwa is located immediately north of the West Pit. • Lapologang is located 480 m south of the West Pit. • Private landowners (Buffelspoort) are located approximately 450 m south of the N4. |
| 21-digit Surveyor General (SG) Code for each farm portion | The relevant project component and corresponding farm names, portions and 21-digit SG Codes are provided in Section 8.4.3.3. |
| Co-ordinates | The co-ordinates of the relevant project components are illustrated in Figure 2. |
| Water catchment and management area | <ul style="list-style-type: none"> • Crocodile River Basin: lower Sterkstroom of the Upper Crocodile Sub-Water Management Area (Sub-WMA). • A21K quaternary catchment. |

3 LOCALITY PLAN

This Section provides regional location and site layout plans.

The regional and local settings of the Tharisa Mine are illustrated in Figure 1 and Figure 2, respectively. The location and layout of the project components are illustrated in Figures provided in Section 4.2.

4 DESCRIPTION OF THE SCOPE OF THE ACTIVITY

This section identifies the listed and specified activities applicable to the Proposed Project and describes the activities that would be undertaken as part of the Proposed Project. It has been compiled using information provided by the Tharisa Project Team and preliminary project-specific specialist input.

4.1 LISTED AND SPECIFIED ACTIVITIES

The main project activities, identified as listed activities in terms of NEMA and the EIA Regulations, 2014 (as amended), as well as the associated or specified activities, identified as listed waste management activities in terms of NEM:WA, are provided Table 4-1 below. The integrated EA and waste management licence application submitted for the Proposed Project applied for the listed activities outlined in Table 4-1 below.

TABLE 4-1: PROPOSED PROJECT ACTIVITIES AND ASSOCIATED LISTED ACTIVITIES

| Main project activity | Aerial extent of the activity (ha) | Listed activity (mark with an x) | Applicable listing notice, listed activity number and activity description | Applicable waste management authorisation |
|--|---|----------------------------------|--|--|
| Extension of a previously approved WRD (West OG WRD) | Approximately 109 ha (108 ha within a disturbed area) | X | NEMA EIA GNR 983 of 2014, as amended: Listing Notice 1 Activity 27 The clearance of an area of 1 hectares 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. | GNR 921 of 2013, as amended: category B, Activity 7: The disposal of any quantity of hazardous waste to land. Relevance: The waste rock may be considered hazardous material. |
| Extension of a previously approved WRD (West OG WRD) | Approximately 109 ha | X | NEMA EIA GNR 983 of 2014, as amended: Listing Notice 1 Activity 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 Mineral and Petroleum Resources Development Act, as well as any other applicable activity contained in this Listing Notice or in Listing Notice 3 of 2014, required for such amendment. Relevance: The Proposed Project requires an amendment of the approved EMP to cater for all the Proposed Project components. | GNR 921 of 2013, as amended: category B, 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). Relevance: Waste rock dumps will be constructed for the storage of waste rock. |
| Establishing waste rock over backfilled portions of the East (East OG WRD) | Approximately 72 ha | | | |
| Extension of a previously approved WRD (West OG WRD) | Approximately 109 ha | X | NEMA EIA GNR 983 of 2014, as amended: Listing Notice 1 Activity 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 | GNR 921 of 2013, as amended: category B, Activity 11: The establishment or reclamation of a residue stockpile or residue deposit resulting from activities which require a mining right, exploration right or production right in terms of the MPRDA. Relevance: The proposed West Above Ground (OG) WRD, East |
| Establishing waste rock over backfilled portions of the East (East OG WRD) | Approximately 72 ha | | | |

| Main project activity | Aerial extent of the activity (ha) | Listed activity (mark with an x) | Applicable listing notice, listed activity number and activity description | Applicable waste management authorisation |
|--|------------------------------------|----------------------------------|---|--|
| | | | <p>section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies;</p> <p>the expansion of existing facilities or infrastructure for the treatment of effluent, wastewater, polluted water or sewage where the capacity will be increased by less than 15 000 cubic metres per day; or</p> <p>the expansion is directly related to aquaculture facilities or infrastructure where the wastewater discharge capacity will be increased by 50 cubic meters or less per day.</p> <p>Relevance: The extension of West Above Ground (OG) WRD and the establishment of the East Above Ground (OG) WRD require an amendment to the existing IWUL.</p> | Above Ground (OG) WRD are considered residue stockpiles. |
| Extension of a previously approved WRD (West OG WRD) | Approximately 109 ha | X | <p>NEMA EIA GNR 985 of 2014, as amended: Listing Notice 3, Activity 12: 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.</p> <p><u>North West:</u></p> <p>World Heritage Sites; core of biosphere reserve; or sites or areas identified in terms of an international convention;</p> <p>A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation;</p> <p>All Heritage Sites proclaimed in terms of National Heritage Resources Act, 1999 (Act No. 25 of 1999);</p> | |
| Establishing waste rock over backfilled portions of the East (East OG WRD) | Approximately 72 ha | | | |

| Main project activity | Aerial extent of the activity (ha) | Listed activity (mark with an x) | Applicable listing notice, listed activity number and activity description | Applicable waste management authorisation |
|-----------------------|------------------------------------|----------------------------------|--|---|
| | | | <p>Critical biodiversity areas 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.</p> <p>Relevance: The Proposed Project is located within a critical biodiversity area (refer to Figure 14).</p> | |

4.2 DESCRIPTION OF ACTIVITIES

4.2.1 OVERVIEW OF EXISTING MINING AND PROCESSING OPERATIONS

Information in the following section was sourced from the approved 2008 EIA and EMPr (Metago, 2008) and 2014 EIA and EMPr (SLR, 2014).

Tharisa currently operates the Tharisa mine, producing chrome and PGM concentrates and has been operational since 2008. Mining is undertaken in two sections, namely the East Mine and West Mine, using conventional open pit truck and shovel methods. The two mining sections are separated by the perennial Sterkstroom River and the D1325 (Marikana Road).

The mining method at Tharisa comprises a standard open pit truck and shovel method. Access to the mining face is by means of haul roads and boxcuts with ramps. Steady state open pit dimensions will differ between the east and west sections because of the varying dip of the target ore body. In the western section, the dimensions are expected to be 360 m wide, 1 km in length along the outcrop with a final high wall averaging at approximately 180 m. On the eastern section, the dimensions are expected to be 580 m wide, 1 km in length along the outcrop with a final high wall averaging at approximately 180 m. The general mining direction is north.

The mineral processing operation comprises a concentrator complex. The concentrator complex caters for two streams, namely PGM's and chrome, to accommodate the different characteristics of the ore seams that are mined. The target production figures for the plants are approximately 40 000 tonnes of PGM concentrate per year; and approximately 1.5 million tonnes of chrome concentrate per year.

Key activities associated with the mining and method are included in Table 4-2 below.

TABLE 4-2: MINING AND PROCESSING RELATED ACTIVITIES AT THARISA (SLR, 2014; METAGO, 2008)

| Activity | | Description |
|--------------------|-----------------------|--|
| Mining | Method | Tharisa is an opencast mine, which comprises two sections namely the East Mine and West Mine. The mining method at Tharisa comprises a standard open pit truck and shovel method. |
| | Access to Ore | Access to the mining face is by means of haul roads and boxcuts with ramps. Steady state open pit dimensions will differ between the east and west sections because of the varying dip of the target ore body. In the western section, the dimensions are expected to be 360m wide, 1km in length along the outcrop with a final high wall averaging at approximately 180m. On the eastern section, the dimensions are expected to be 580m wide, 1km in length along the outcrop with a final high wall averaging at approximately 180m. The general mining direction is north. |
| | Removal of topsoil | All topsoil is dozed into stockpiles along the low wall (outcrop) sides of the open pits. Topsoil is stockpiled separately for use in rehabilitation. |
| | Drilling and blasting | Once the topsoil is removed the area is drilled as per the drill design. Charges are designed to prevent excessive ground vibration, airblast and fly rock. The remaining waste rock and the ore is drilled and blasted together. |
| | Removal of waste rock | The removal of waste rock above the ore body is undertaken as a bulk operation by load and haul with large equipment. The material is placed on waste rock dumps. |
| | Removal of ore | Run of mine ore (ROM) is stockpiled according to ROM type, prior to being sent to the concentrator plant for processing. |
| Mineral processing | Concentrator plant | <p>Crushing and screening</p> <p>Chrome ROM material will be tipped into a receiving bin for crushing by a primary jaw crusher. The crushed material is then conveyed to the secondary jaw crusher circuit. Oversized material from the secondary circuit is returned to the primary crusher feed conveyor for reprocessing. Correctly size material from the secondary crushing process will be separated into different fractions using a double deck screen. The lumpy and chips from the screening process will report to the DMS section, while the undersize will report to a mill feed stockpile for milling prior to spiral plant treatment.</p> <p>The PGM plant crushing facility will consist of a primary gyratory crusher and a secondary cone crusher. Material is discharged directly into the primary gyratory crusher to be crushed. Following primary crushing the material will be stored in a stockpile. Ore will be extracted from the stockpile by feeders onto a conveyor for transport to a sizing screen. The crushed material is screened with the oversize material reporting to the secondary crusher for further crushing (closed circuit). Undersize from the screen will report to a silo for storage prior to milling.</p> |

| Activity | | Description |
|----------|--|--|
| | Dense Media Separation (DMS) – chrome plant only | The chrome lumpy material will be treated in a DMS plant, while the chip fraction will be treated in a cyclone plant. A drum gives good separation at the lumpy size fraction as the cyclone does for the smaller chip fraction. The recovered lump and chip material will be conveyed to separate stockpiles, while the discard (float) material is transported to a discard bin for removal to the waste rock stockpile. |
| | Milling | <p>The Chrome undersize material from the secondary screening process will be fed at a controlled rate to a ball mill for grinding. Product from the ball mill will be screened with oversize returning to the grinding circuit and undersize reporting to the spirals plant.</p> <p>PGM ore from the silo will be fed onto the mill feed conveyor by three variable speed feeders. The primary ball mill will receive both feed material, as well as mill water for flushing the ore into the mill. Material from the mill discharges onto a screen where the oversize will be collected in a bin and the undersize pumped through a cyclone. The cyclone overflow will be filtered with the oversize material being recycled and the undersize material reporting to a screen together with the cyclone sinks. Undersize material from the screen will report to the agitated rougher flotation feed tank, while the oversize material reports to the secondary mill feed.</p> |
| | Flotation – PGM plant only | The flotation plant will consist of a rougher, cleaner, re-cleaner and scavenger section. Chemicals are added at the various stages to the feed material, allowing the PGE's to attach to the foam. In some cases, a depressant may be required to prevent other minerals from attaching to the carrier-bubbles. Underflow material will be rejected to the PGE spirals plant whilst the concentrate is pumped to the product thickener for dewatering. The PGE concentrate is pumped to a storage tank for loading by truck. |
| | Spiral | <p>The PGM underflow material from the flotation section is pumped to cyclones with the underflow gravitating into the spirals and the overflow reporting to the tailing's thickener. Two streams will leave the spirals plant; a product stream and tailings. The product stream will be dewatered and stockpiled (8000t). Water will be recovered from these stockpiles and will be returned to the PGM plant for water and product recovery. Tailings will be dewatered in the PGE tailings thickener for water recovery, with the underflow reporting to the tailings dam. Approximately 40 000 tonnes of PGM concentrate will be produced per year.</p> <p>The chrome material from the grinding section will be pumped to cyclones with the underflow gravitating into the spirals and the overflow reporting to the tailing's thickener. Two streams will leave the spirals plant; a product stream (Met and Chem grade chromite) and tailings. The product stream will be pumped to four cyclones to produce two fine material stockpiles (8000t met grade and 2000t chem. grade). Drainage from these stockpiles will be returned to the MG1 plant for water and product recovery. Tailings will be dewatered in the tailing's thickener for water recovery, while the underflow is pumped to the tailings dam. Approximately 1.5 million tonnes of chrome concentrate will be produced per year.</p> |

| Activity | | Description |
|----------------|--------------|---|
| Dispatch | Method | Railway transportation of product is the preferred option for the mine. The nearest railway is to the north of the mine at the Marikana Siding, the siding has been upgraded in consultation with Transnet to cater for Tharisa's requirements. Product is transported via 30-tonne trucks with an estimated rate of 320trucks/day for chrome concentrate and 8trucks/day for PGM. Chrome will be dispatched to Richards Bay via the Marikana Railway siding and/or the N4. PGM will be dispatched to smelters in the region. |
| Waste disposal | Tailings dam | Slurry from the secondary rougher flotation process will be discarded as tailings. It will be thickened and pumped to a tailings facility for deposition by means of conventional spigotting. Tailings production will be approximately 4 million tonnes per year. Process water from the tailings dam will be recycled to the plant for use in the process. After the underground mine is operational the new arisings are planned to be backfilled underground. |
| Rehabilitation | Method | Rehabilitation is concurrent with mining. Waste rock/overburden will be used to backfill voids where required. Overburden material will be used to cater for any settlement. Once the backfill material has settled, topsoil will be placed on top of the overburden and vegetation will be re-established. |

4.2.2 EXISTING AND PENDING WRD'S AT THARISA

With reference to the approved 2008 EIA and EMPr (Metago, 2008) and 2014 EIA and EMPr (SLR, 2014), waste rock from the open pit mining operations has been used in the construction of the TSF containment walls, mine haul roads and as general backfill for various platforms. These uses would continue where required. Waste rock will also be used in the backfilling of the open pits on an advancing front basis once the pits have been developed sufficiently. Excess waste rock is stored in waste rock dumps. The approved EIA and EMP report (Metago, 2008) made provision for four waste rock dumps. These include (Figure 5):

- Far East WRD (made up of East WRD 1 and East WRD 2);
- West WRD 1;
- East WRD; and
- Far West WRD 1.

In addition, Green Gold Group (Pty) Ltd (GGG) (GGG, June 2019), submitted an environmental authorisation application for the extension of the West WRD 1. Various decisions are still pending. Refer to Figure 5 for the location of the West WRD 1.

4.2.3 DESCRIPTION OF PROPOSED PROJECT

4.2.3.1 Overview of Proposed Project

The nature of the pits at Tharisa is such that there is continually more waste rock generated than capacity available in the worked-out areas of the pits and the balance must be dumped on surface WRDs. Additional waste rock handling and storage capacity is therefore required to accommodate the waste rock from the open pit operations. As part of its on-going mine planning, Tharisa has identified the need for additional WRD storage on site. In this regard, Tharisa is making application to the DMRE for an integrated EA and update of the mine's EMPr and is proposing the following:

- The expansion of the existing and approved Far West WRD 1 by a footprint of 109 ha. The expanded area will be referred to as the West Above Ground (OG) WRD. Portions of the West OG WRD will be located on backfilled areas of the West Pit; and
- The establishment of a waste rock dump (referred to as the East OG WRD) on backfilled portions of the East Pit. The proposed East OG WRD will cover an area of approximately 72 ha.

The Proposed Project forms part of the existing approved operations and as such the development of the proposed WRD's will not generate any additional employment opportunities.

4.2.3.2 Proposed Waste Rock Dumps

Geochemistry analysis – Acid Base Accounting (ABA)

Acid base accounting (ABA) is undertaken to determine the potential for mined material to generate acidic drainage. A sampling exercise was undertaken in 2019 (SLR, 2019) which indicate that the waste rock has a paste pH greater than 9 in all samples and a low sulfide concentration. It follows that the waste rock material associated with the proposed new waste rock dumps are unlikely to generate acid.

Geochemistry analysis – leachate

Ten (10) lithology samples were collected and submitted to a South African National Accreditation System (SANAS) accredited laboratory for waste assessment analysis. Samples within the Norite, Anorthosite and Pyroxenite lithology were analysed.

Synthetic Precipitation Leaching Procedure was used to determine the potential drainage quality from sampled lithologies at the Tharisa Mine (SLR, 2019). The Tharisa mine waste rock leachate data was analysed against the SANS 241, World Health Organization (WHO, 2017) drinking water standards and International Finance Corporation (IFC) Mining Effluent Guidelines (2007). Those elements which have exceeded these guidelines are presented in Table 4-3 below. The following constituents of concern (CoCs) were identified in the Tharisa mine WRD samples:

- Aluminium (Al) exceeded the SANS 241: Operational guidelines in all the samples;
- Iron (Fe) exceeded the SANS 241: Aesthetic guidelines in samples MG-4A-OBW-1A.1B.1C, MG-4A-OBW-3A.3B.3C, MG-4A-OBW-4A.4B.4C, MG-3-IBW-6A.6B.6C, MG-2-IBW-7A.7B.7C, MG-2-IBW-8A.8B.8C, while the rest of the samples exceeded the SANS 241: Chronic Health and IFC (2007) guidelines;
- Lead (Pb) exceeded SANS 241: Chronic health and WHO (2017) guidelines in samples MG-4A-OBW-1A.1B.1C and MG-2-IBW-7A.7B.7C;
- The SANS 241: Operational and IFC mining effluent (2007) pH ranges (> 9) were exceeded in all samples except MG-4A-OBW-3A.3B.3C, MG-4A-OBW-5A.5B.5C and MG-1-IBW-10A.10B.10C which still fell within the top end of the tolerance range of > 8 pH; and
- The Total Suspended Solids (TSS) parameter exceeded IFC (2007) guidelines for all WRD samples.

Updated geochemistry work will be undertaken as part of the Proposed Project and will be provided in the EIA and EMPr.

TABLE 4-3: LEACHATE WASTER ROCK DATA SCREENING RESULTS

| | Al | As | B | Ba | Ca | Cd | Co | Cr | Cu | Fe | Hg | K | Mg | Mn | Na | Ni | Pb | Sb |
|--|-------|------------|-------|-------|------|-------------|--------|------------|--------|-----------|-------------|------|------|------------|------|------------|------------|------------|
| | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l |
| WATER LEACH 1:4 | | | | | | | | | | | | | | | | | | |
| SANS 241 (2015) Operational | 0,30 | | | | 150 | | | | | | | 50 | | | | | | |
| SANS 241 (2015) Aesthetic | | | | | 150 | | | | | 0,3 | | | 70 | 0,1 | 200 | | | |
| SANS 241 (2015) Acute Health | | | | | | | | | | | | | | | | | | |
| SANS 241 (2015) Chronic Health | | 0,01 | 2,4 | 0,7 | | 0,003 | 0,5 | 0,05 | 2 | 2 | 0,01 | | | 0,4 | | 0,07 | 0,01 | 0,02 |
| WHO standards for drinking water (2017) | | 0,01 | 2,4 | 0,7 | | 0,003 | | 0,1 | 2 | | 0,01 | | | | | 0,07 | 0,01 | 0,02 |
| IFC Mining Effluent (2007) | | 0,10 | | | | 0,05 | | 0,1 | 0,3 | 2 | 0,002 | | | | | 0,5 | 0,2 | |
| Leach Blank | 0,006 | <0.00 1 | 0,005 | 0,001 | 0,08 | <0.000 1 | <0.001 | <0.00 1 | <0.001 | 0,00 3 | <0.000 1 | 0,01 | 0,02 | <0.00 1 | 0,01 | <0.00 1 | <0.00 1 | <0.00 1 |
| MG-4A-OBW-1A.1B.1C/WATER/LEACH | 5,05 | 0,004 | 0,076 | 0,110 | 9,59 | 0,0001 | 0,001 | 0,018 | 0,008 | 1,60 4 | <0.000 1 | 1,25 | 1,88 | 0,019 | 8,63 | 0,007 | 0,036 | 0,003 |
| Duplicate | 5,11 | 0,004 | 0,071 | 0,107 | 9,74 | 0,0001 | 0,002 | 0,019 | 0,009 | 1,57 9 | <0.000 1 | 1,18 | 1,85 | 0,022 | 8,70 | 0,008 | 0,035 | 0,003 |
| MG-4A-OBW-2A.2B.2C/WATER/LEACH | 4,45 | 0,002 | 0,068 | 0,131 | 9,98 | <0.000 1 | 0,001 | 0,037 | 0,003 | 2,02 7 | <0.000 1 | 1,16 | 2,78 | 0,048 | 8,56 | 0,009 | 0,003 | 0,001 |
| MG-4A-OBW-3A.3B.3C/WATER/LEACH | 2,99 | 0,002 | 0,075 | 0,145 | 11,5 | <0.000 1 | 0,001 | 0,018 | 0,004 | 1,13 4 | <0.000 1 | 1,58 | 2,19 | 0,014 | 8,93 | 0,008 | 0,003 | 0,001 |
| MG-4A-OBW-4A.4B.4C/WATER/LEACH | 3,56 | 0,004 | 0,060 | 0,119 | 8,46 | <0.000 1 | 0,001 | 0,033 | 0,003 | 1,81 2 | <0.000 1 | 0,93 | 3,02 | 0,031 | 8,90 | 0,012 | 0,001 | <0.00 1 |
| MG-4A-OBW-5A.5B.5C/WATER/LEACH | 1,93 | 0,005 | 0,096 | 0,176 | 9,27 | <0.000 1 | 0,002 | 0,061 | 0,004 | 2,34 4 | <0.000 1 | 2,77 | 3,97 | 0,043 | 10,2 | 0,013 | 0,004 | 0,002 |
| MG-3-IBW-6A.6B.6C/WATER/LEACH | 3,24 | 0,003 | 0,087 | 0,178 | 9,68 | <0.000 1 | 0,002 | 0,047 | 0,003 | 1,32 8 | 0,0001 | 1,39 | 3,08 | 0,032 | 9,34 | 0,011 | 0,004 | 0,001 |
| MG-2-IBW-7A.7B.7C/WATER/LEACH | 6,04 | 0,005 | 0,113 | 0,222 | 11,6 | 0,0001 | <0.001 | 0,030 | 0,014 | 1,12 4 | <0.000 1 | 1,15 | 1,53 | 0,025 | 10,3 | 0,004 | 0,022 | 0,003 |
| MG-2-IBW-8A.8B.8C/WATER/LEACH | 6,87 | 0,006 | 0,063 | 0,124 | 10,4 | <0.000 1 | <0.001 | 0,025 | 0,004 | 1,05 9 | <0.000 1 | 1,03 | 1,74 | 0,033 | 8,06 | 0,004 | 0,003 | <0.00 1 |
| MG-1-IBW-9A.9B.9C/WATER/LEACH | 1,10 | 0,003 | 0,116 | 0,222 | 7,73 | <0.000 1 | 0,005 | 0,075 | 0,003 | 2,77 8 | <0.000 1 | 6,23 | 6,49 | 0,082 | 9,63 | 0,023 | 0,004 | 0,001 |
| MG-1-IBW-10A.10B.10C/WATER/LEACH | 1,07 | 0,006 | 0,131 | 0,230 | 8,13 | <0.000 1 | 0,003 | 0,072 | 0,002 | 2,76 6 | <0.000 1 | 5,72 | 5,83 | 0,076 | 12,0 | 0,018 | 0,003 | <0.00 1 |

| | Se | Si | Sr | Ti | V | Zn | pH | TDS | EC | F | Cl | NO ₂ | NO ₃ | SO ₄ | CN (Total) | Cr 6 ⁺ | TSS |
|--|--------|------|------------|------------|------------|--------|------------|------|----------|----------|-------|-----------------|-----------------|-----------------|-------------------|-------------------|-------|
| WATER LEACH 1:4 | mg/l | mg/l | mg/l | mg/l | mg/l | mg/l | | mg/l | mS/ m | mg/ l | mg/l | mg/ l | mg/ l | mg/l | mg/l | mg/l | mg/l |
| SANS 241 (2015) Operational | | | | | | | 5 - 9,5 | | | | | | | | | | |
| SANS 241 (2015) Aesthetic | | | | | | 5 | | 1200 | 170 | | 300 | | | 250 | | | |
| SANS 241 (2015) Acute Health | | | | | | | | | | | | 0,9 | 11 | 500 | | | |
| SANS 241 (2015) Chronic Health | 0,04 | | | | 0,2 | | | | | 1,5 | | | | | 0,2 | | |
| WHO standards for drinking water (2017) | 0,04 | | | | | | | | | 1,5 | | | 50 | | 0,2 | | |
| IFC Mining Effluent (2007) | | | | | | 0,5 | 6 - 9 | | | | | | | | 1,0 | 0,1 | 50 |
| Leach Blank | <0.001 | 0,04 | <0.00 1 | <0.00 1 | <0.00 1 | <0.001 | 6,10 | <30 | 1,11 | <0.1 | <0.25 | <0.2 | <0.3 | <0.3 | <0.5 | <0.05 | n/a |
| MG-4A-OBW-1A.1B.1C/WATER/LEACH | <0.001 | 9,54 | 0,022 | 0,036 | 0,011 | 0,020 | 9,69 | 110 | 12,2 | <0.1 | 2,25 | <0.2 | 1,25 | 8,76 | <0.5 | <0.05 | 3184 |
| Duplicate | 0,001 | 9,38 | 0,022 | 0,035 | 0,011 | 0,021 | 9,69 | 112 | 12,6 | <0.1 | 2,05 | <0.2 | 1,25 | 8,93 | <0.5 | <0.05 | n/s |
| MG-4A-OBW-2A.2B.2C/WATER/LEACH | 0,002 | 9,72 | 0,023 | 0,028 | 0,012 | 0,026 | 9,74 | 110 | 13,0 | <0.1 | 1,79 | <0.2 | 1,57 | 8,31 | <0.5 | <0.05 | 4328 |
| MG-4A-OBW-3A.3B.3C/WATER/LEACH | <0.001 | 8,00 | 0,022 | 0,021 | 0,014 | 0,011 | 8,62 | 107 | 14,9 | <0.1 | 2,88 | <0.2 | 4,34 | 12,6 | <0.5 | <0.05 | 13765 |
| MG-4A-OBW-4A.4B.4C/WATER/LEACH | <0.001 | 8,2 | 0,021 | 0,024 | 0,013 | 0,045 | 9,74 | 102 | 13,3 | <0.1 | 2,12 | <0.2 | 2,18 | 8,56 | <0.5 | <0.05 | 2092 |
| MG-4A-OBW-5A.5B.5C/WATER/LEACH | 0,001 | 7,2 | 0,019 | 0,043 | 0,018 | 0,010 | 8,89 | 105 | 13,4 | <0.1 | 2,83 | <0.2 | 3,55 | 12,0 | <0.5 | <0.05 | 1861 |
| MG-3-IBW-6A.6B.6C/WATER/LEACH | <0.001 | 6,87 | 0,024 | 0,018 | 0,009 | 0,016 | 9,74 | 114 | 13,3 | <0.1 | 2,24 | <0.2 | 2,43 | 13,8 | <0.5 | <0.05 | 1941 |
| MG-2-IBW-7A.7B.7C/WATER/LEACH | 0,001 | 8,42 | 0,034 | 0,024 | 0,005 | 0,060 | 9,62 | 110 | 14,5 | <0.1 | 3,60 | <0.2 | 1,61 | 15,3 | <0.5 | <0.05 | 6149 |
| MG-2-IBW-8A.8B.8C/WATER/LEACH | <0.001 | 9,01 | 0,029 | 0,016 | 0,006 | 0,019 | 9,68 | 104 | 12,3 | 0,13 | 2,29 | <0.2 | 1,53 | 7,81 | <0.5 | <0.05 | 5612 |
| MG-1-IBW-9A.9B.9C/WATER/LEACH | <0.001 | 6,1 | 0,024 | 0,035 | 0,020 | 0,021 | 9,04 | 106 | 14,8 | <0.1 | 1,70 | <0.2 | 1,70 | 13,5 | <0.5 | <0.05 | 1900 |
| MG-1-IBW-10A.10B.10C/WATER/LEACH | 0,002 | 5,6 | 0,027 | 0,040 | 0,022 | 0,017 | 8,98 | 104 | 15,2 | <0.1 | 2,44 | <0.2 | 2,09 | 13,3 | <0.5 | <0.05 | 2174 |

Waste classification

In accordance with Regulation 3 of GNR 632 of the NEM:WA, waste rock stockpiles need to be characterised and classified using a risk-based approach to determine the appropriate management measures. In the absence of a prescribed method on how to undertake a risk-based analysis, the characterisation and assessment of waste rock material at Tharisa was determined in accordance with the following associated National Norms and Standards:

- The National Norms and Standards for the assessment of waste for landfill disposal (GNR 635 of 2013); and
- The National Norms and Standards for disposal of waste to landfill (GNR 636 of 2013).

The waste classification and assessment in terms was undertaken by SLR in 2019 (SLR, 2019). The results from the assessment indicate that the waste rock is classified as a Type 3 waste in terms of the total concentration and a Type 4 waste in terms of the leachable concentrations. In terms of the risk-based waste assessment, it has been motivated that Class-D liner system is required for storage of the waste rock material, based on the following reasons:

- the leachable concentrations of all the constituents are below the threshold limit which indicates a lack of mobilised leachate and a low risk of seepage;
- the placed waste rock material will be dry and not contain water; and
- the waste rock material is not acid generating.

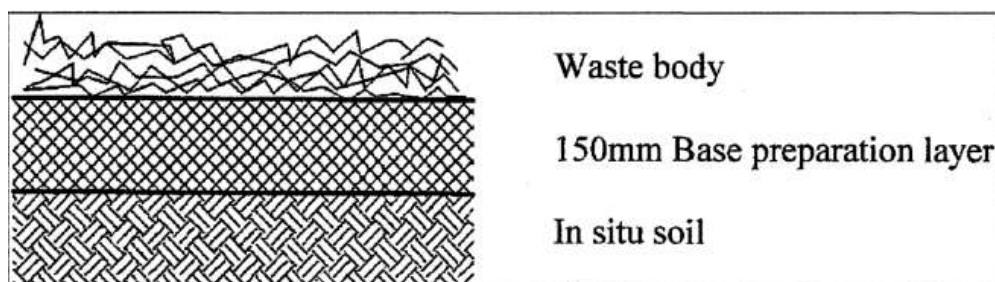


FIGURE 4: CLASS D LINER REQUIREMENTS

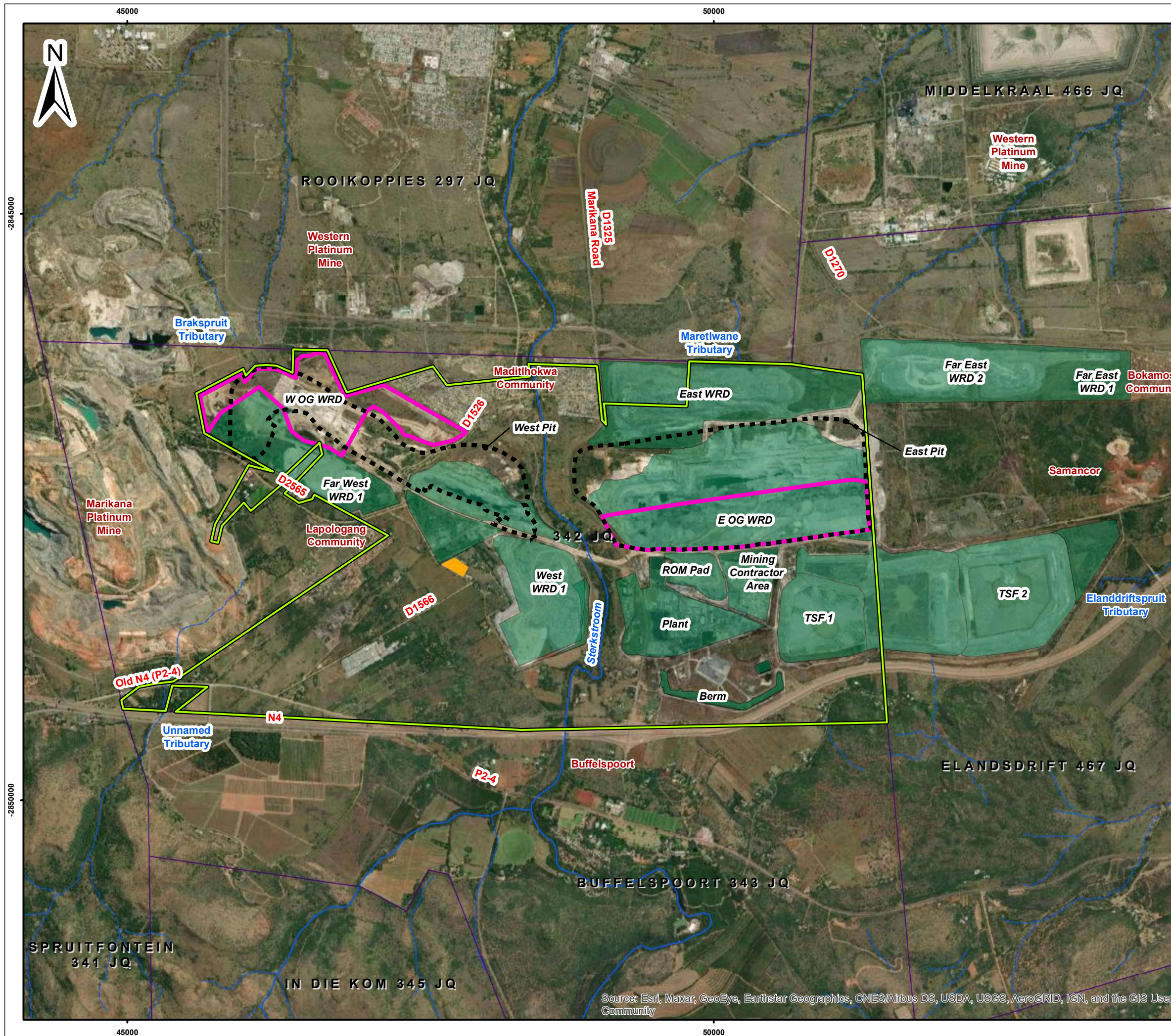
Design of the proposed WRD's

The management of residue stockpiles and deposits must be undertaken in accordance with Regulations regarding the Planning and Management of Residue Stockpiles and Residue Deposits (GN 632 of 2015, as amended). In this regard, the design features of the proposed WRD's are presented in Table 4-4. The location of the proposed WRD's is illustrated in Figure 5. The detailed design report and drawings of the proposed WRD's will be provided as part of the EIA and EMP phase.

TABLE 4-4: DESIGN FEATURES OF THE WRD'S

| Feature | Detail |
|--|--|
| Physical dimensions | <p>Height: Approximately 70 m (applies to all proposed WRD's)</p> <p>Bench height: Approximately 15 m</p> <p>Footprint:</p> <p>West OG WRD: Approximately 109 ha; and</p> <p>East OG WRD: Approximately 72 ha.</p> <p>Maximum storage capacity:</p> <p>West OG WRD: Approximately 35.31 million m³; and</p> <p>East OG WRD: Approximately 26.26 million m³.</p> |
| Chemical properties | With reference to Section 8.4.1.1 the waste rock material comprises pyroxenite, anorthosite and norite. The geochemical work undertaken for waste rock samples at Tharisa indicate that the waste rock is non-acid generating and based on leachate tests chemicals of concern that are likely to leach from the WRD's when compared to water quality standards include: Elevated concentrations of Al, Chromium (Cr), Iron (Fe), Manganese (Mn), Lead (Pb). |
| Waste rock transport and deposition | Excess open pit waste rock loaded onto mine dump trucks and transported to WRDs. Waste rock access ramps constructed with a maximum gradient of 1V:7H (8°) for mine dump trucks. Waste rock is then dumped and spread / flattened with a bulldozer. |
| Control of seepage and dirty water run-off | The control of seepage from the toe of the WRD's as well as run-off from the side slopes will be achieved by the construction of a series of toe paddocks and secondary toe paddock cross walls around the perimeter of the WRD's, from where it will seep into the unsaturated soil or evaporate. |
| Diversion of clean water | Stormwater diversion trenches will be established to divert clean surface run-off from the surrounding area away from the WRD in order to prevent the contamination of clean water. |
| Topsoil stripping | Topsoil in WRD footprint areas will be stripped and stockpiled in accordance with the topsoil conservation guide. A stripping depth of 500 mm has been recommended by the soils study. Stripping and stockpiling of topsoil will be done in advance of dumping. |
| Lining | With reference to Section 0, a Class D liner is required. |
| Side slopes | Average slope: 1V:3H |
| Access and access control | A 4m wide waste rock road will be constructed around the perimeter of each dump for routine inspections and maintenance. A perimeter fence around each WRD is planned. |

| Feature | | Detail |
|----------------|---------------------------------|---|
| Monitoring | | Monitoring of seepage water retained in the perimeter toe paddocks and of boreholes around the perimeter of each WRD. |
| Dust control | | Operational Phase: Watering of roads for dust suppression. Post Operational Phase: No measures necessary due to the coarse particle size distribution. |
| Closure | | <p>The WRD should be shaped to ensure the area is free draining (i.e no ponding of water on the top surface post closure). The WRD side slopes to be confirmed through on-going field trials. The WRD should be capped with a minimum of 300 mm soil/growth medium material. The capping thickness should be confirmed through on-going field trials.</p> <p>No active groundwater protection measures are envisaged during closure given the relatively low pollution potential of the residual waste rock material. In the event that water quality monitoring around any WRD indicates that the WRDs are causing pollution, additional management measures will be investigated in consultation with a qualified specialist.</p> |
| Rehabilitation | Revegetation | The WRD is to be revegetated using a mix of indigenous grasses (i.e. dry seeding) and trees/shrubs (i.e. hand planting of seedlings). The vegetation species will be confirmed through ongoing field trials. |
| | Erosion control | The erosion management measures and/or mitigation measures to be confirmed through ongoing field trials. |
| | Maintenance and aftercare | Maintenance and aftercare period to be confirmed through ongoing field trials. |
| | Rehabilitation success criteria | Rehabilitation success will be determined by monitoring trends in soil nutrient levels, soil microbial levels, vegetation cover and vegetation biodiversity levels and comparing data and temporal trends in the data to numerical targets. |



Legend

- Tharisa Mining Right Area
- Final Pit Extent
- Proposed Project Components
- Mining and Related Areas
- School and Graveyard
- Farm Boundaries
- Rivers - Perennial
- Rivers - Non-Perennial

Scale: 1 : 31 500 @ A3
 Projection: Transverse Mercator
 Datum: Hartebeeshoek, Lo27

THARISA MINERALS (Pty) Ltd

Figure 5
Site Layout

SLR

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720.20002.00065 2022/04/25

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

5 POLICY AND LEGISLATIVE CONTEXT

This Section outlines the key legislative context applicable to the Proposed Project and outlines the guidelines, policies and plans that have been considered during the Scoping phase of the S&EIA process.

5.1 LEGISLATION CONSIDERED IN THE PREPARATION OF THE SCOPING REPORT

In accordance with the EIA Regulations, 2014 (as amended) all legislation and guidelines that have been considered in the Scoping phase of the S&EIA process must be documented. Table 11 below provides a summary of the applicable legal framework that has been considered and will be considered in the assessment process.

TABLE 5-1: LEGAL FRAMEWORK

| Applicable legislation | Reference where applied | Applicability to the project |
|---|-----------------------------------|--|
| Mineral and Petroleum Resources Development Act (No. 28 of 2002) (MPRDA), as amended and associated Regulations | Introduction and Section 5.1.1 | Any changes to the mine's approved EMPr's require consent from the DMRE. A Section 102 application was prepared by Tharisa and was submitted to the DMRE on the 12 th of May 2022 via the South African Mineral Resources Administration System (SAMRAD). |
| National Environmental Management Act (No. 107 of 1998) (NEMA) and associated Regulations | Introduction, Sections 5.1.2 | An integrated EA and waste management licence application was prepared by SLR and was submitted to the DMRE on the 12th of May 2022 via SAMRAD. A copy of the application form is available on request. |
| National Environmental Management Waste Act (No. 59 of 2008) (NEM:WA) and associated regulations. | Introduction, Sections 5.1.3 | |
| National Water Act (No. 36 of 1998) (NWA) and associated Regulations | Section 5.1.4 | The Proposed Project will require an amendment to the IWUL Section 21 water uses. This process will be managed as part of a separate application process. |
| National Environmental Management: Air Quality Act (No. 39 of 2004) (NEM: AQA) and associated Regulations. | Section 5.1.5 | The Proposed Project will result in the release of air emissions. Air emissions was thus considered as part of project planning and a Monitoring Programme will be compiled for the Proposed Project. |
| National Environmental Management: Biodiversity Act (No. 10 of 2004) (NEM: BA) and associated Regulations. | Section 8.4.1.5 | The Proposed Project will result in the clearance of indigenous vegetation and may include the removal of protected plant species. Biodiversity was thus considered as part of project planning and a Biodiversity Study will be compiled for the Proposed Project. In addition to this, consideration will also be given to the management of alien invasive species. |
| Conservation of Agricultural Resources Act (No. 43 of 1983) (CARA) | | |
| National Forest Act (No. 84 of 1998) (NFA) | | |
| National Heritage Resources Act (No. 25 of 1999) (NHRA). | Section 5.1.9 and Section 8.4.2.1 | The Proposed Project will entail the change of character of a site exceeding 5 000 m ² . Heritage/cultural and palaeontological resources were thus considered as part of project planning and heritage/cultural and palaeontological studies will be compiled for the Proposed Project. |

5.1.1 MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT (NO. 28 OF 2002) (MPRDA), AS AMENDED

The MPRDA governs the acquisition, use and disposal of mineral and petroleum resources in South Africa. The MPRDA promotes equitable access to the nation's mineral and petroleum resources. The objectives of the Act, amongst others, are to promote economic growth and mineral and petroleum resources development in the Republic, particularly development of downstream industries through provision of feedstock and development of mining and petroleum inputs industries and also to promote employment and advance the social and economic welfare of all South Africans.

Chapter 4 of the Act provides a framework to regulate the application for mining, prospecting, and closure rights. Section 24(4) of NEMA provides the minimum requirements for procedures for the investigation, assessment, management, and communication of the potential impacts. With the establishment of the “One Environmental System” in 2014, the DMRE must apply the range of environmental principles included in Chapter 2 of NEMA when taking decisions that significantly affect the environment. To give effect to the general objectives of Integrated Environmental Management (IEM), the potential impacts on the environment of listed or specified activities must be considered, investigated, assessed, and reported on to the competent authority.

In addition, Section 102 of the MPRDA governs the amendment of rights, permits, mine work programmes and EAs and management programmes. In terms of the Act, these may not be amended or varied without the written consent of the Minister.

The Proposed Project will require an amendment to the approved 2014 EMP. It follows that a Section 102 Amendment will be applied for in terms of the MPRDA.

5.1.1.1 MPRDA Regulations (No. 527 of 2004), as amended

The MPRDA Regulations (No. 527 of 2004), as amended, promulgated in terms of Section 107 of the MPRDA, provide for a range of matters relating to the administration of the Act. Part 1 details regulations for the lodgement of applications, Part 2 deals with Social and Labour plans while Part 3 sets out environmental regulations for mineral development. The recent amendment in March 2020 removed the great majority of the environmental provisions from the Regulations. These Regulations had not been practicably implementable since the December 2014 introduction of the “One Environmental System” and the amendment of the overriding legislation (MPRDA and NEMA).

5.1.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NO. 107 OF 1998) (NEMA), AS AMENDED

The NEMA establishes principles and provides a regulatory framework for decision-making on matters affecting the environment. All organs of state must apply the range of environmental principles included in Section 2 of NEMA when taking decisions that significantly affect the environment. Included amongst the key principles is that all development must be socially, economically, and environmentally sustainable and that environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably. The participation of I&APs is stipulated, as is that decisions must consider the interests, needs and values of all I&APs.

Chapter 5 of NEMA provides a framework for the integration of environmental issues into the planning, design, decision-making and implementation of plans and development proposals. Section 24 provides a framework for granting of EAs. To give effect to the general objectives of Integrated Environmental Management (IEM), the potential impacts on the environment of listed or specified activities must be considered, investigated, assessed, and reported on to the competent authority. Section 24(4) provides the minimum requirements for procedures for the investigation, assessment, management, and communication of the potential impacts. In terms of the management of impacts on the environment, Section 24N details the requirements for an EMPr.

5.1.2.1 EIA Regulations (No. 982 of 2014), as amended

The EIA Regulations, 2014 (as amended) promulgated in terms of Chapter 5 of NEMA, provide for the control over certain listed activities. These listed activities are detailed in Listing Notice 1 (as amended by GN No. 327 of 7 April 2017), Listing Notice 2 (as amended by GN No. 325 of 7 April 2017) and Listing Notice 3 (as amended by GN No. 324 of 7 April 2017). The undertaking of activities specified in the Listing Notices is prohibited until an EA has been obtained from the competent authority. Such EA, which may be granted subject to conditions, will only be considered once there has been compliance with the EIA Regulations, 2014 (as amended).

The EIA Regulations, 2014, as amended set out the procedures and documentation that need to be complied with when applying for EA. A Basic Assessment process must be applied to an application if the authorisation applied for is in respect of an activity or activities listed in Listing Notices 1 and/or 3 and a S&EIA process must be applied to an application if the authorisation applied for is in respect of an activity or activities listed in Listing Notice 2.

The Proposed Project will trigger activities specified in Listing Notice 2 (refer to Table 4-1) and therefore a S&EIA process is required in order for the DMRE to consider the application in terms of NEMA. As the DMRE is the competent authority for the NEMA and NEM:WA activities, Tharisa will apply for an integrated EA, as provided for in section 24L of the NEMA.

5.1.2.2 Regulations Pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations, 2015

The purpose of the Regulations Pertaining to the Financial Provision for Prospecting, Exploration, Mining or Production Operations (No. 1147 of 2015), as amended, is to regulate the determination and making of financial provision as contemplated in the Act for the costs associated with the undertaking of management, rehabilitation and remediation of environmental impacts from prospecting, exploration, mining or production operations through the lifespan of such operations and latent or residual environmental impacts that may become known in the future.

The compilation of a financial provision report in support of the Proposed Project forms part of the plan of study as outlined in Section 9.4.

5.1.3 NATIONAL ENVIRONMENTAL MANAGEMENT: WASTE ACT (No. 59 OF 2008) (NEM:WA)

The NEM:WA regulates all aspects of waste management and has an emphasis on waste avoidance and minimisation. NEM:WA creates a system for listing and licensing waste management activities which may have a detrimental effect on the environment. A waste management activity identified in terms of the NEM:WA may not commence, be undertaken or conducted except in accordance with published standards or a Waste Management Licence.

Listed waste management activities are included in GN 921 of November 2013, as amended. Category A and Category B listed waste management activities above certain thresholds are subject to a process of impact assessment and licensing. Category C listed waste management activities do not require a waste management license but are subject to the provisions of National Norms and Standards (GN 926, November 2013). The assessment and reporting process in support of a Waste Management Licence application must be undertaken in accordance with the EIA Regulations, 2014 (as amended). These Regulations define the requirements for the submission; processing, consideration, and decision of applications authorisation of listed activities. Activities listed in Category A require a Basic Assessment process, while activities listed in Category B require a S&EIA process in order for authorities to consider an application in terms of NEM:WA.

The Proposed Project activities trigger waste management listed activities under Category B (refer to Table 4-1, requiring a waste management licence. As the DMRE is the competent authority for the NEMA and NEM:WA activities, Tharisa will apply for an integrated EA, as provided for in section 24L of the NEMA.

5.1.3.1 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 environmental impact assessment 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 Proposed Project will need to meet the requirements of GN 632 of 2015. The detailed design reports will be provided as part of the EIA Phase.

5.1.4 NATIONAL WATER ACT (No. 36 OF 1998) (NWA)

The NWA provides a legal framework for the effective and sustainable management of water resources in South Africa. It serves to protect, use, develop, conserve, manage and control water resources, promoting the integrated management of water resources with the participation of all stakeholders. This Act also provides national norms and standards, and the requirement for authorisation (either a Water Use Licence or General Authorisation) of water uses listed in Section 21 of the Act.

The Proposed Project includes water uses identified in terms of Section 21 of the NWA. The Proposed Project will therefore require an amendment of the existing IWUL to cater for the additional WRD's. It must be noted that this S&EIA process does not address the requirements of a water use licensing process. This will be handled as part of a separate process with the competent authority, the DWS.

5.1.4.1 Regulations on the use of Water for Mining and Related Activities, 1999

GNR. 704 of June 1999, was established to provide regulations on the use of water for mining and related activities aimed at the protection of water resources. The main principle conditions of GNR. 704 of June 1999 applicable to this Proposed Project are:

- Condition 6 which describes the capacity requirements of clean and dirty water systems. Clean and dirty water systems must be kept separate and must be designed, constructed, maintained, and operated to ensure conveyance of flows of a 1:50 year recurrence event. Clean and dirty water systems should not spill into each other more frequently than once in 50 years. Any dirty water dams should have a minimum freeboard of 0.8 m above full supply level.
- Condition 7 which describes the measures which must be taken to protect water resources. All dirty water or substances which may cause pollution should be prevented from entering a water resource (by spillage, seepage, erosion etc.) and ensure that water used in any process is recycled as far as practicable.

The design of the proposed WRD's will need to meet the requirements of GNR. 704 of June 1999. The detailed WRD design reports will be provided as part of the EIA.

5.1.5 NATIONAL ENVIRONMENTAL MANAGEMENT: AIR QUALITY ACT (NO. 34 OF 2004) (NEM:AQA), AS AMENDED

The NEM:AQA regulates all aspects of air quality, including: prevention of pollution and environmental degradation; providing for national norms and standards (through a National Framework for Air Quality Management) regulating air quality monitoring, management and control; and licencing of activities that result in atmospheric emissions and have or may have a significant detrimental effect on the environment.

5.1.5.1 Listed activities and Minimum Emission Standards

In terms of Section 22 of NEM:AQA no person may conduct an activity releasing emissions (GN No. 893, 22 November 2013) without an Atmospheric Emissions Licence (AEL). However, the Proposed Project does not trigger any activities sets out in the notice and thus there is no requirement for an AEL.

5.1.5.2 National Dust Control Regulations, 2013 (GN 827 of 2013) (NDCR)

The NDCR were gazetted on 1 November 2013. The purpose of the regulations is to prescribe general measures for the control of dust in all areas including residential and light commercial areas. The regulations provide a

guideline for monitoring and measuring dust fall. Dust fall is assessed for nuisance impact and not an inhalation health impact.

The Proposed Project entails materials handling and will lead to the release of dust. Potential dust emissions from the Proposed Project will be assessed against NDCR and a Monitoring Programme will be compiled for the Proposed Project.

5.1.5.3 NEM: AQA Waterberg Bojanala Priority Area Air Quality Management Plan, 2015 (GN 1207)

The Minister declared the Waterberg–Bojanala Priority Area (WBPA) on 15 June 2012 as the third National Priority Area, crossing the North West and Limpopo provincial borders. It includes the Waterberg District Municipality (WDM) in Limpopo Province and parts of the Bojanala Platinum District Municipality in the North West Province, with nine Local Municipalities.

An Air Quality Management Plan (AQMP) was developed for the WBPA. The Overall Objective of the WBPA AQMP is to be realised through the attainment of five related goals and is considered as part of the proposed project. These are:

- Cooperative governance in the WBPA promotes the implementation of the AQMP;
- Air quality management in the WBPA is supported by effective systems and tools;
- Ambient concentrations of air pollutants comply with the NAAQS in the WBPA as a result of emission reductions;
- Air quality decision making in the WBPA is informed by sound research; and
- Knowledge and the understanding of air quality amongst stakeholders in the WBPA is enhanced.

The AQMP, will be taken into consideration as part of the proposed project given that Tharisa is located in the WBPA.

5.1.6 NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT (No. 10 OF 2004) (NEM:BA)

The NEM:BA provides for the management and conservation of South Africa's biodiversity and the protection of species and ecosystems that warrant national protection. NEM:BA regulates the carrying out of restricted activities, without a permit, that may harm listed threatened or protected species or activities that encourage the spread of alien or invasive species and makes provision for the publication of bioregional plans and the listing of ecosystems and species that are threatened or in need of protection. Bioregional plans should be considered by competent authorities in their decision-making regarding an application for EA.

Based on the South African Conservation Areas Database, the Proposed Project is located within the transition zone of the Magaliesberg Biosphere Reserve. In addition, the Proposed Project is located within a Critical Biodiversity Area and Ecological Support Area as per the 2015 North West Biodiversity Sector Planning.

5.1.6.1 Alien and Invasive Species Regulations, 2014 and Lists

Alien and Invasive Species Regulations (GN R 598 of 2014) as well as the Alien and Invasive Species List (GN R 864 of 2016) have been published to regulate the monitoring, control and eradication of listed invasive species. All

landowners on whose land alien and invasive species occur must make the necessary arrangements to be compliant with these Regulations. These will guide the EMP for the project.

5.1.7 CONSERVATION OF AGRICULTURAL RESOURCES ACT (No. 43 of 1983) (CARA)

The objects of this Act are to provide for the conservation of the natural agricultural resources of the Republic by the maintenance of the production potential of land, by combating and prevention of erosion and weakening or destruction of the water sources, and by the protection of the vegetation and the combating of weeds and invader plants. As part of the Proposed Project, in particular during the compilation of the EMP for the project, consideration will be given to the management of alien invasive species.

5.1.8 NATIONAL FORESTS ACT (No. 84 of 1998) (NFA)

The NFS provides for the sustainable management and development of forests for the benefit of all, including providing special measures for the protection of certain forests and trees. In terms of Section 15(1) of the Act, no person may cut, disturb, damage or destroy any protected tree, except under a licence.

The Proposed Project will entail the removal of more than 156 ha of undisturbed vegetation. Should any protected tree species be identified within these areas, an application for a permit to remove these trees will be applied for. Protected trees will be identified through a specialist study that will be commissioned during the EIA phase.

5.1.9 NATIONAL HERITAGE RESOURCES ACT (No. 25 of 1999) (NHRA)

The NHRA provides for the identification, assessment, and management of the heritage resources of South Africa. The Act lists development activities that would require authorisation by the responsible heritage resources authority. The Act requires that a person who intends to undertake a listed activity notify the relevant provincial heritage authority at the earliest stages of initiating such a development. The relevant provincial heritage authority would then in turn, notify the person whether a Heritage Impact Assessment (HIA) should be submitted. However, according to Section 38(8) of the NHRA, a separate report would not be necessary if an evaluation of the impact of such development on heritage resources is required in terms of the Environment Conservation Act (No. 73 of 1989) (now replaced by NEMA) or any other applicable legislation. The decision-making authority should, however, ensure that the heritage evaluation fulfils the requirements of the NHRA and consider in its decision-making any comments and recommendations made by the relevant heritage resources authority.

The total application area is approximately 417 ha. Of the total application area approximately 1 ha will be located on undisturbed mining areas. In this regard, the provisions of the NHRA have been considered and a HIA and Palaeontological Assessment will be undertaken for the Proposed Project. The Reports will be submitted to the South African Heritage Resources Agency (SAHRA) for their comment via the South African Heritage Resources Information System (SAHRIS).

5.2 GUIDELINES, POLICIES, PLANS AND FRAMEWORKS

The guidelines, policies and plans listed Table 13 below have been considered during the Scoping phase of the S&EIA process.

TABLE 5-2: GUIDELINE AND POLICY FRAMEWORK

| Guideline | Governing body | Relevance |
|---|---|--|
| National Development Plan 2030 (NDP) | National Planning Commission | The NDP is the overarching development planning policy for the country, to which all other development planning, in particular spatial planning must be aligned. The NDP outline South Africa's Vision and provides the Framework for eliminating poverty and reducing inequality by 2030. |
| New Growth Path (2011) (NGP) | Department of Economic Development | The NGP reflects the commitment of Government to prioritise employment creation in all economic policies and sets out the key drivers and sectors for employment which will be the focus of Government. |
| North West Development Corporation Strategic Plan 2015-2020 | North West Provincial Government | The vision of the strategic plan is to ensure that the North West province becomes the cornerstone of sustainable economic development and job creation. This would be achieved through the province's contribution to economic growth through sustained focus on agriculture, culture and tourism through villages, townships and small dorpiess. |
| North West Provincial Spatial Development Framework (2016) (PSDF) | Office of the Premier of the North West | The North West PSDFs sets out the key spatial challenges faced by the province and the proposed spatial policies, which have been formulated to address these challenges. As such, it supports the spatial development vision to achieve the North West Development Plan 2030. |
| Bojanala Platinum District Municipality Integrated Development Plan (2017-2022) (IDP) | Bojanala Platinum District Municipality | The Bojanala Platinum District Municipality IDP is the principle strategic instrument guiding all planning, management, investment and development within the province in order to provide best solutions towards sustainable development. |
| Rustenburg Local Municipality IDP (2018-2019) | Rustenburg Local Municipality | The Rustenburg Local Municipality IDP is the principle strategic instrument guiding all planning, management, investment and development within the province in order to provide best solutions towards sustainable development. |
| Public participation guideline in terms of NEMA (2017) | DEFF | The purpose of this guideline is to ensure that an adequate public participation process is undertaken during the S&EIA process. |
| Guideline on need and desirability (2017) | DEFF | This guideline informs the consideration of the need and desirability aspects of the Proposed Project. |
| National Freshwater Ecosystem Priority Areas (NFEPA) (2011) | DHSWS | |

| Guideline | Governing body | Relevance |
|---|--|--|
| Mining and Biodiversity Guideline (2013) | South African National Botanical Institute (SANBI) | Biodiversity was considered as part of project planning and in the assessment of potential impacts. Reference was made to various national and provincial databases to determine potential presence and conservation (refer to Section 8.4.1.5). |
| Important Bird and Biodiversity Areas | Birdlife International | |
| National Biodiversity Assessment | DFFE | |
| National Protected Areas Expansion Strategy, 2008 (NPAES) | | |
| North West Biodiversity Section Plan, 2015. | | |

6 NEED AND DESIRABILITY

This Section aims to provide an overview of the need and desirability of the Proposed Project with the strategic context of national development policy and planning, broader societal needs and regional and local planning, as well as the NEMA principles and sustainable development. More detail pertaining to the need and desirability will be provided in the EIA and EMPr.

6.1 BACKGROUND

The DEA guideline on need and desirability (GN. R891, 20 October 2014) notes that while addressing the growth of the national economy through the implementation of various national policies and strategies, it is essential that these policies take cognisance of strategic concerns such as climate change, food security, as well as the sustainability in supply of natural resources and the status of our ecosystem services. In 2017, the DEA published an updated guideline on project need and desirability, although this is yet to be formally gazetted. The 2017 guideline on need and desirability provides that addressing the need and desirability of a development is a way of ensuring sustainability – in other words, that a development is ecologically sound and socially and economically justifiable.

Thus, the over-arching framework for considering the need and desirability of development in general is taken at the policy level through the identification and promotion of activities / industries / developments required by civil society as a whole. The DEA guideline further notes that at a project level (as part of an EIA process), the need and desirability of the project should take into consideration the content of regional and local plans, frameworks, and strategies. The S&EIA need to provide information as to how the development will address the socio-economic impacts of the development, and whether there would be any socio-economic impact resulting from the development on people's environmental rights. Considering the need and desirability of a development entails the balancing of these factors. Consistent with the aim and purpose of the EIA, the concept of "need and desirability" relates to, amongst others, the nature, scale, and location of the development being proposed, as well as the wise use of land and natural resources.

6.2 NATIONAL POLICY AND PLANNING FRAMEWORK

This section aims to provide an overview of the regional and local policy and planning context relating to the Proposed Project.

6.2.1 NATIONAL DEVELOPMENT PLAN 2030

The National Development Plan (NDP) 2030 provides the context for all growth in South Africa. The NDP provides a broad strategic framework, setting out an overarching approach to confronting poverty and inequality through the promotion of development, based on the six focused and interlinked priorities. One of the key priorities is "faster and more inclusive economic growth". To transform the economy and create sustainable expansion for job creation, an average economic growth exceeding 5% per annum is required. The NDP sets out that transforming the economy also requires changing patterns of ownership and control.

It is also acknowledged that environmental challenges are in conflict with some of these development initiatives. As such, it is emphasised that there is also a need to:

- Protect the natural environment;
- Enhance the resilience of people and the economy to climate change;
- Reduce carbon emissions in line with international commitments;
- Make significant strides toward becoming a zero-waste economy; and
- Reduce greenhouse gas emissions and improve energy efficiency.

6.2.2 NEW GROWTH PATH

The New Growth Path (NGP) (2011) reflects the commitment of Government to prioritise employment creation in all economic policies and sets out the key drivers and sectors for employment which will be the focus of Government. The sectors identified for prioritisation include infrastructure, agriculture, mining, manufacturing, tourism, and the green economy.

6.3 REGIONAL AND LOCAL POLICY AND PLANNING FRAMEWORK

This section aims to provide an overview of the regional and local policy and planning context relating to the proposed development.

6.3.1 NORTH WEST

The North West Provincial Spatial Development Framework (PSDF) sets out the key spatial challenges faced by the Province and the proposed spatial policies, which have been formulated to address these challenges. As such, it supports the spatial development vision to achieve the North West Development Plan 2030. To realise the spatial development vision, the PSDF outlines five broad development principles: (i) spatial justice (ii) fair and good governance (iii) sustainability (iv) efficiency and (v) integration.

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

1. Strategic Objective 1: Focus development on regional spatial development initiatives, development corridors, development zones and nodes.
2. Strategic Objective 2: Protect biodiversity, water and agricultural resources.
3. Strategic Objective 3: Promote Infrastructure Investment.
4. Strategic Objective 4: Support economic development and job creation guiding the spatial development pattern of North West.
5. 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.

6.3.2 BOJANALA INTEGRATED DEVELOPMENT PLAN AND SPATIAL DEVELOPMENT FRAMEWORK

Each municipality is required to prepare an Integrated Development Plan and that a Spatial Development Framework (SDF) be a component of the IDP. The Bojanala Platinum District Municipality Integrated Development Plan is the principle strategic instrument guiding all planning, management, investment and development within the province in order to provide best solutions towards sustainable development. The vision of the Bojanala District Municipality IDP (2017 to 2021) is to provide a model of cooperative governance for effective and efficient service delivery in partnership with local municipality and all stakeholders. The IDP aims to realize the NDP, the North West PSDP by identifying the following priority issues and challenges within the district:

- Water and sanitation;
- Roads and storm water;
- Electricity;
- Land and housing;
- Economic development;
- Institutional development;
- Municipality healthy; and
- Social services.

Economic opportunities abound in mining can be exploited further when skills of the people are in line with economic and technological needs.

6.3.3 RUSTENBURG LOCAL MUNICIPALITY

The Rustenburg Local Municipality Integrated Development Plan is the principle strategic instrument guiding all planning, management, investment, and development within the province to provide best solutions towards sustainable development. The Rustenburg Local Municipality's IDP (2017 – 2022) 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. 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.

6.4 CONSISTENCY WITH POLICY AND PLANNING CONTEXT

The previous sections have considered the policy and planning context at national, regional, and local level, which are relevant to the Proposed Project. As highlighted above, there is a drive from national and provincial Governments to stimulate development and grow the economy of South Africa with a strong focus on job creation in all sectors. Mining has been identified as drivers of economic growth and job creation and are furthermore considered particularly important in the provincial economy.

The Proposed Project is consistent with and in support of the broad national policy framework for the development of mining in South Africa. At the regional level, it is deemed consistent with the North West PSDF and the SDF of Bojanala.

6.5 CONSISTENCY WITH NEMA PRINCIPLES

The national environmental management principles contained in NEMA serve as a guide for the interpretation, administration, and implementation of NEMA and the EIA Regulations. In order to demonstrate consistency with the NEMA principles, a discussion of how these principles are taken into account is provided in Table 6-1 below.

TABLE 6-1: CONSIDERATION OF THE NEMA PRINCIPLES IN RELATION TO THE PROPOSED PROJECT

| National Principles | Environmental Management | Comment |
|---|--------------------------|--|
| (2) Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural, and social interests equitably. | | Mining has long been one of the key drivers of economic growth and employment in South Africa. The Proposed Project activities would continue to support the day-to-day operations of the Tharisa mine while ensuring that environmental management principles are implemented during operation. The EIA process identifies the needs and interests of potentially affected parties and attempts to address issues and concerns raised through the course of the study. |
| (3) Development must be socially, environmentally and economically sustainable. | | Government has set development goals aimed at reducing poverty, unemployment, and inequality. The New Growth Path identifies the mining value chain as one of the seven key economic sectors for job creation. Mining is promoted in the national, regional, and local policy and planning frameworks; thus, the Proposed Project activities support the continuation of the mine's operation and aims to find acceptable environmental management strategies for that promotes sustainable development. |
| (4)(a) Sustainable development requires the consideration of all relevant factors including the following: (i) That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied; (ii) that pollution and degradation of the environment are avoided, or, where they | | The S&EIA process considers resultant biophysical, cultural and socio-economic impacts as a result of the Proposed Project. Measures to avoid, minimise and/or remedy potential pollution and/or degradation of the environment that may occur as a result of the Proposed Project shall be detailed in the EMPR during the EIA phase. |

| National Principles | Environmental Management | Comment |
|--|--------------------------|---|
| <p>cannot be altogether avoided, are minimised and remedied;</p> <p>(iii) that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;</p> <p>(iv) that waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;</p> <p>(v) that the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;</p> <p>(vi) that the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised;</p> | | <p>(4)(a)(vii) that a risk-averse and cautious approach is applied, which considers the limits of current knowledge about the consequences of decisions and actions; and</p> |
| <p>(4)(a)(viii) that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied.</p> | | <p>Assumptions, uncertainties, and limitations associated with the compilation of the reports will be included in the EIA Phase. Compliance with the various legislative requirements is presented in this Scoping report.</p> |
| <p>(4)(b) Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.</p> | | <p>The EIA process considers and assesses the resultant social, economic, and biophysical impacts of the project. The EMPr will provide the recommended management measures to mitigate the significance of identified impacts.</p> |
| <p>(4)(c) Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.</p> | | <p>The S&EIA process that is being followed recognises that all elements of the environment are linked and interrelated. DMRE, as the decision-making authority, will be responsible for taking all aspects of the environment, including whether or not the potential impacts of the project would unfairly discriminate against any person, into consideration when making a decision regarding the Proposed Project.</p> |
| <p>(4)(d) Equitable access to environmental resources, benefits, and services to meet basic human needs and ensure human well-being must be pursued and special measures may be taken to ensure access thereto by</p> | | <p>The Proposed Project activities are located within the current mining operations and will not limit access to environmental resources that meet basic human needs.</p> |

| National Principles | Environmental Management | Comment |
|--|--------------------------|--|
| categories of persons disadvantaged by unfair discrimination. | | |
| (4)(e) Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle. | | The applicant is committed to comply with environmental health and safety obligations for their current operations and during closure. |
| (4)(f) The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured. | | The public participation process has been undertaken in accordance with the requirements of the EIA Regulations, 2014 (as amended). |
| (4)(g) Decisions must take into account the interests, needs and values of all I&APs, and this includes recognizing all forms of knowledge, including traditional and ordinary knowledge. | | The S&EIA process will take into the account the interests, needs and values of all I&APs, through the submission of comments on the Proposed Project. Thus, the decision-makers will have all the necessary information before them on which to base an informed decision. |
| (4)(h) Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means. | | The Scoping report prepared for the Proposed Project will be made available to communities for review and comment. |
| (4)(i) The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment. | | The S&EIA process considers identified potential social, economic, biophysical impacts of the project in an integrated manner. The significance of these impacts will be assessed as part of the process. |
| (4)(j) The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected. | | The owners and managers of the mine would be required to comply with the requirements of the Occupational Health and Safety Act. An Environmental Awareness Plan will be developed in the EIA phase, which will require staff be informed about any aspects of their work that may pose a danger to the environment. |
| (4)(k) Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law. | | The public consultation process is being undertaken in accordance with the requirements of the EIA Regulations, 2014 (as amended) and will allow for the distribution of the S&EIA reports for public review and comment. This information will be provided in an open and transparent manner. |
| (4)(l) There must be intergovernmental co-ordination and harmonisation of policies, legislation and actions relating to the environment. | | The public participation process provides an opportunity for the Organs of State to provide comment on the Proposed Project and address any potential conflicts between policies or other developmental proposals administered by them that may be in conflict with the Proposed Project before decision-making. |

| National Principles | Environmental Management | Comment |
|---|--------------------------|--|
| (4)(m) Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures. | | It is not anticipated that the Proposed Project would result in any conflicts between organs of state. |
| (4)(n) Global and international responsibilities relating to the environment must be discharged in the national interest. | | DMRE, as the decision-making authority, will be responsible for taking cognisance of any international obligations that could have an influence on the project. The Proposed Project does not require compliance with any international standards. |
| (4)(o) The environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage. | | The S&EIA process considers and assesses the identified potential social, economic, biophysical impacts of the project. |
| (4)(p) The costs of remedying pollution, environmental degradation, and consequent adverse health effects and of preventing, controlling or minimizing further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment. | | The owners and managers of the Tharisa mine will be responsible for the implementation of the measures that will be included in the EMPr. |
| (4)(q) The vital role of women and youth in environment management and development must be recognised and their full participation therein must be promoted. | | The public participation process for the Proposed Project has been and will continue to be inclusive of women and the youth. |
| (4)(r) Sensitive, vulnerable, highly dynamic, or stressed ecosystems, such as coastal shores, estuaries, wetlands and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure. | | The S& EIA process undertaken for the Proposed Project has identified relevant sensitive and/or vulnerable areas and assessed potential impacts if applicable. Appropriate mitigation measures have been proposed where required. |

6.6 ENSURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES

Due to the nature of mining projects, impacts on sensitive biodiversity areas, linkages between biodiversity areas and related species, and the role that they play in the ecosystem, are probable. The sections of the proposed West OG WRD (refer to Section 8.7.1.3 and 8.7.1.4) could result in the general disturbance of biodiversity, particularly if unmitigated. This is of relevance when considering that the Proposed Project areas are in the endangered Marikana Thornveld, which has already been extensively disturbed by existing operations and surrounding mining, community, and farming activities. The protected Morula Tree is known to occur at the Tharisa Mine, and as follows could be disturbed if located within the undisturbed footprint of the section of the West OG WRD. This will be confirmed as part of specialist investigations.

Further to this, when considering national and provincial site sensitivity databases, the Proposed Project area falls within areas of biodiversity important in terms of the Mining Biodiversity Guidelines, North West Biodiversity Section Plan, 2015, IBA's and the transitional zone of the Magaliesberg Biosphere. As part of the EIA phase of the Proposed Project and with input from specialists, the impacts associated with the destruction and general disturbance need to be further assessed (refer to 9.4) in order to determine appropriate mitigation measures.

6.7 PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT

Community/society priorities are officially expressed through public documents including the provincial growth and development strategy and spatial development framework documents. Although provincial growth and development plans mostly focus on municipal priorities over a five-year cycle, they do provide some insight and guidance in terms of future planning for the municipalities. Spatial Development Frameworks (SDFs) which usually have a longer life cycle aim to guide and facilitate the implementation of Integrated Development Plans (IDPs) for the municipality. The vision of the North West Provincial Growth and Development Plan and SDF is to eliminate income poverty, reduce inequality and unemployment rate by creating an enabling environment for sustainable employment, economic growth, and infrastructure development. The local municipal IDP identifies mining, agriculture, construction and infrastructure and tourism as sectors to be prioritised for driving economic growth and reducing unemployment.

Given that the Proposed Project forms part of existing approved operations and that the Proposed Project will not generate significant employment opportunities, negative project-related socio-economic impacts including inward migration are not expected to occur. In addition, the Proposed Project is required to provide additional capacity for storage of waste to allow for the optimisation of mining. As a result, the potential for increased economic benefits (as a result of job creation) due to project activities is expected to be insignificant. However, the Proposed Project will allow continuation of the current employment opportunities during operation, decommission and closure.

7 PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

All listed activities will cease at the end of operation. The mine has a remaining life of mine of 12-years (i.e. until 2034).

8 PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED ALTERNATIVE

This Section describes the alternatives (if applicable) considered for the project and summarises the process being followed to reach the preferred alternatives.

8.1 ALTERNATIVES CONSIDERED

8.1.1 DETAILS OF ALTERNATIVES CONSIDERED

8.1.1.1 Layout Alternative

The Proposed Project will be located within the existing Mining Right boundary which is constrained for open space. The Tharisa Mine is also bordered by other mining companies (Western Platinum Mine, Marikana Platinum Mine and Samancor) on the West, North and Eastern boundaries of the Tharisa Mining Right area (refer to Figure 2). The N4 and farming community of Buffelspoort is located to the South of the Tharisa Mine. In addition to this, some of the WRD's will be placed on previously disturbed areas, thereby minimising the project footprint. It follows that no alternative for the location of the proposed additional WRD's have been considered for the Proposed Project.

8.1.1.2 Technology/Activity Alternatives

The following technology/ activity alternatives were considered as part of the Proposed Project. These includes the following:

- **Trucking waste rock to a different location:** Open pit mining consists primarily of the removal of topsoil and overburden, drilling and blasting of ore, and the transportation of waste rock by haul trucks. Transportation of waste rock is cyclic in nature and requires the dispatch of a large number of trucks per month. Reducing the cycle time for transportation of waste rock results in increased productivity and reduces the operational costs. The proximity of the Proposed Project to the open pits allows for increased productivity, minimisation of transportation costs as well as minimisation of noise and traffic impacts associated with transportation of waste rock;
- **Alternative mining technique (underground mining):** Underground mining is used to extract ore from below the surface of the earth safely, economically and with as little waste as possible. Underground mining is practical when the ore body is too deep to mine profitably by open pit. The target ore body for underground mining has not been reached for Tharisa, as such underground mining, as an alternative mining technique is not considered feasible; and
- **Waste rock backfill of open pits:** Tharisa has approval for backfilling of the open pits with waste rock, this is currently undertaken concurrently with mining. The waste rock backfill of open pits at Tharisa mine has reached its maximum capacity. This is due to the fact that a portion of the open pits needs to remain open during operation, to allow for safe working within the open pits.

It follows that no activity/technology alternative have been considered for the Proposed Project.

8.1.2 THE “NO-GO” ALTERNATIVE

The “no-go” alternative would mean that the proposed WRD’s would not be established. This would restrict the mine’s ability to realise the economic benefits associated with extracting the mineral resources from the East and West Mines. As discussed in section 4.2.3, the mine is continually generating more waste rock from mining activities than previous anticipated. The balance of waste rock which cannot be backfilled in the pit will require dumping on surface. It follows that no other no other feasible alternatives exist for waste storage. The “no-go” option would not allow for the optimisation of the current mining operations and could potentially result in the closure of the mine.

8.2 DETAILS OF THE PUBLIC PARTICIPATION PROCESS

This section describes the public participation process undertaken in line with Section 6 of the EIA Regulations, 2014 (as amended). The aim of the public consultation process is to co-ordinate a process through which I&APs are informed of the Proposed Project and environmental assessment process and are provided with an opportunity to provide input into the project plan, the assessment and proposed mitigation measures. I&APs broadly refers to all landowners, adjacent landowners, land users, non-government organisations, municipalities, surrounding mines and industries, communities, commenting authorities and parastatals. An overview of the public participation process undertaken to date is outlined in Table 8-1. Due to COVID-19 restrictions alternative methods to inform I&APs about the Proposed Project were identified and are catered for in the table below.

Since the initiation of the public participation process, there have been several changes to the Proposed Project description. In this regard, public participation material distributed to date, has referred to the establishment of West WRD 2, the increase in the height of existing TSF's through a self-raise and establishment of a new tailings dam (referred to as TSF 3). In this regard, public participation material distributed initially (in November 2021), referred to the following project components:

- Establish a new WRD (West WRD 2);
- Extend a previously approved WRD (currently West OG WRD);
- Establish WRDs above backfilled portions of the East and West pits (currently East and West OG WRDs); and
- A new tailings storage facility (TSF 3).

The Proposed Project description was revised and as such the public participation material was redistributed in April 2022 and referred to the following components:

- Extend a previously approved WRD (currently West OG WRD);
- Establish WRDs above backfilled portions of the East and West pits (currently East and West OG WRDs); and
- Increase in the height of the existing TSF through self-raise.

It is important to note, that West WRD 2, TSF 3 and the self-raise of the existing TSF no longer form part of this environmental authorisation process. The design work and planning for these project components need to be further progressed before Tharisa is in a position to initiate an environmental authorisation process for these components. Going forward, this environmental authorisation process only focusses on the establishment of the West OG WRD and the East OG WRD.

TABLE 8-1: OVERVIEW OF THE PUBLIC PARTICIPATION PROCESS

| Task | Description |
|--|---|
| Public participation completed to date | Pre-application phase |
| | <p>DMRE pre-application meeting</p> <p>A pre-application meeting was held with the DMRE on 6 July 2021. The purpose of the pre-application meeting was to:</p> <ul style="list-style-type: none"> provide information about the Proposed Project and alternatives being considered (if relevant); provide information about the receiving biophysical, cultural, and socio-economic environment; provide information about the environmental authorisation process to be undertaken for the Proposed Project; provide information and obtain input pertaining to the potential biophysical, cultural, and socio-economic impacts identified including associated specialist input required for the Proposed Project; provide information and obtain input pertaining to the planned public participation process for the Proposed Project; and record any comments and suggestions made by the DMRE. <p>A copy of the meeting minutes inclusive of the attendance register is included in Appendix C.</p> |
| | Notification – I&APs |
| | <p>Land claims commissioner consultation</p> <p>The Land Claims Commissioner has been contacted to confirm if any land claims have been lodged on the properties that the project activities are located on. On 24 May 2021 the Land Claims Commissioner confirmed that a land claim was associated with the project property, however the claim was dismissed on the basis that minimum requirements in terms of the Land Rights Act No. 22 of 1994 were not met.</p> <p>A copy of the correspondence with the land claims commissioner is included in Appendix C.</p> |
| Public participation completed to date | <p>A desktop social scan</p> <p>A desktop social scan was undertaken to verify details of the existing I&AP database for Tharisa. The social scan included the following:</p> <ul style="list-style-type: none"> the verification of the relevant surrounding landowners, adjacent landowners, land users, non-government organisations, municipalities, surrounding mines and industries, community forums, commenting authorities and parastatals; verification of contact details for I&APs on the existing database; and verification of appropriate communication structures. <p>The above verification process was undertaken using a combination of methods which included telephonic discussions, deed searches and sourcing landowner information from Tharisa. The I&AP database will be updated on an ongoing basis for the duration of the environmental authorisation process.</p> |
| | <p>Background Information Document (BID)</p> <p>A BID was compiled by SLR and distributed to all I&APs registered on the project database. The BID provided:</p> <ul style="list-style-type: none"> information about the Proposed Project and alternatives being considered (if relevant); information about the receiving biophysical, cultural, and socio-economic environment; information about the environmental authorisation process to be undertaken for the Proposed Project; information pertaining to the potential biophysical, cultural, and socio-economic impacts identified including associated specialist input required for the Proposed Project; |

| Task | | Description |
|--|---|--|
| | | <ul style="list-style-type: none"> information pertaining to the planned public participation process for the Proposed Project; and information on how I&APs can have input into the environmental assessment process. <p>A registration and response form was attached to the BID, which provided I&APs with an opportunity to register as an I&AP and submit comments on the Proposed Project. The BID was initially made available in English, Afrikaans, and Setswana on 25 November 2021. Due to changes in the project description, a revised BID in English, Afrikaans and Setswana was distributed on 11 April 2022.</p> <p>Copies of the BID including the proof of distribution is included in Appendix C.</p> |
| | Site notices | SLR placed laminated A2-sized site notices in English, Afrikaans, and Setswana at key conspicuous positions in and around the Tharisa Mine as well as nearby towns on 25 November 2021. Due to changes in the project description, revised site notices in English, Afrikaans and Setswana were distributed on 11 April 2022. It is important to note that efforts were made to place site notices at the Bufelspoort Dam, Kilarnies and Garage near the Tharisa Mine. SLR was only allowed to place site notices at the Garage. Copies of the site notices, and photographic proof of placement are included in Appendix C. |
| | Newspaper advertisements | Block advertisements were placed in two local newspapers. In this regard, advertisements were published in the Rustenburg Herald on 25 November 2021 and in the Brits Pos 26 November 2021. Due to changes in the project description, revised advertisement were published in the Rustenburg Herald and Brits Pos on 15 April 2022. Refer to Appendix C for copies of the advertisements. |
| | Flyers | Flyers were initially distributed in the communities on 25 November 2021. Due to changes in the project description, revised flyers were distributed on 11 April 2022. The flyers provided information pertaining to the Proposed Project and the environmental authorisation process. In addition to this, the flyers informed I&APs how they can have input into the environmental assessment process and how to access information. Copies of the flyers are included in Appendix C. |
| | Loud hailing | Loud hailing services were utilised within the communities of Lapologang, Mmadithlokwa and Bokamoso to inform members about the Proposed Project and to invite them to attend community meetings in December 2021. Similar platforms will be used going forward. |
| Public participation completed to date | Focussed meetings | |
| | Focussed I&APs meetings and general public meetings | <p>To date the following meetings have been held:</p> <ul style="list-style-type: none"> Focussed meetings with ward councillor from Mmadithlokwa, Bokamoso and Lapologang on 30 July 2021, 15 August 2021 and 14 October 2021. Community meetings with Mmadithlokwa and Lapologang on 08 December 2021; Community meeting with Bokamoso on 14 December 2021. It should be noted that SLR was prevented from presenting the Proposed Project to the community who indicated their unwillingness to participate in the process due to pending SLP related issues between the mine and the community. Focussed virtual meeting with commenting authorities. This meeting was scheduled for 25 April 2022; however no commenting authorities attended the meeting; and General public meeting held on 25 April 2022. Changes to the project description were discussed during this meeting. <p>The purpose of the focussed meetings and general public meetings were to:</p> |

| Task | | Description |
|------------------------------|---|--|
| Planned public participation | | <ul style="list-style-type: none"> provide information about the Proposed Project and alternatives being considered (where relevant); provide information about the receiving biophysical, cultural, and socio-economic environment provide information about the environmental authorisation process to be undertaken for the Proposed Project; provide information and obtain input pertaining to the potential biophysical, cultural, and socio-economic impacts identified including associated specialist input required for the Proposed Project; provide information and obtain input pertaining to the planned public participation process for the Proposed Project; and record any comments and suggestions made by the I&APs. <p>Due to the change to the project description, additional meetings were held with the Lapologang, Mmadithlokwa and Bokamosa ward councillors. The meeting also served to update the ward councillors regarding the status of the environmental authorisation process and the next steps in the process. Further to this, the ward councillor provided input regarding the location for the placement of the Scoping Report for public review. The following focussed meetings were held:</p> <ul style="list-style-type: none"> Focussed meeting held on 29 April 2022 to inform the Lapologang and Mmadithlokwa ward councillors of the change to the project description. Focussed meeting held on 04 May 2022 to inform the Bokamoso ward councillors of the change to the project description. <p>A copy of all focussed and general public meeting minutes are included in Appendix C.</p> |
| | Application phase | |
| | NEMA/NEM:WA Environmental Authorisation application | Submission of the NEMA/NEM:WA Environmental Authorisation application form to the DMRE via the SAMRAD system. A copy of the application is available on request. |
| | Review of the Scoping Report and EIA and EMP | |
| Planned public participation | I&AP review of Scoping Report | <p>The Scoping Report will be made available for public review and comment for a period of 30 calendar days to all I&APs registered on the project database. Non-technical summaries of the Scoping Report will be made available to all I&APs registered on the project database via email. The Scoping Report will also be made available on SLR's data-free website.</p> <p>I&APs will be notified when the Scoping Report will be available for public review and comment via a combination SMS notifications, emails, and WhatsApp groups.</p> |
| | Submission of Scoping Report to the DMRE | The Scoping Report and EIA and EMP will be updated to include any comments received during the public review and commenting period. This updated report will be submitted to the DMRE for consideration. |

8.3 SUMMARY OF ISSUES RAISED BY I&APS

A summary of the issues and concerns raised by I&APs, regulatory authorities and commenting authorities to date as part of the public participation process are tabulated below.

TABLE 8-2: SUMMARY OF ISSUES RAISED BY I&APS AND COMMENTING AUTHORITIES

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
|-------------------------------|-----------------------|--|-------------------|--|
| Commenting authority | | | | |
| Heritage | | | | |
| Natasha Higgitt (SAHRA). | 01/12/2021 | <p>Please note that all development applications are processed via our online portal, the South African Heritage Resources Information System (SAHRIS) found at the following link: http://sahra.org.za/sahris/. We do not accept emailed, posted, hardcopy, faxed, website links or DropBox links as official submissions.</p> <p>Please create an application on SAHRIS and upload all documents pertaining to the Environmental Authorisation Application Process. As per section 24(4)b(iii) of NEMA and section 38(8) of the National Heritage Resources Act, Act 25 of 1999 (NHRA), an assessment of heritage resources must form part of the process and the assessment must comply with section 38(3) of the NHRA.</p> <p>Once all documents including all appendices are uploaded to the case application, please ensure that the status of the case is changed from DRAFT to</p> | This was done. | N/A |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
|---|-----------------------|--|--|--|
| | | SUBMITTED. Please ensure that all documents produced as part of the EA process are submitted as part of the application. | | |
| Elijah Dumisani Katsetse (SAHRA Heritage Officer) | 15 February 2022 | <p>Interim Comment</p> <p>The SAHRA APM Unit requests the following is undertaken in terms of section 38(3) of the National Heritage Resources Act (25 of 1999) as part of the EA application process.</p> <p>The proposed expansion and/or addition of a TSF and WRD has the potential to impact negatively on heritage and/or cultural resources, therefore a heritage impact assessment must be conducted. A field-based assessment of the impact to archaeological resources must be conducted by a qualified archaeologist. The report must comply with section 38(3) of the NHRA and the SAHRA 2006 Minimum Standards: Archaeological and Palaeontological Component of Impact Assessments, and the 2012 Minimum Standards: Archaeological Component of Heritage Impact Assessments. The Minimum Standards provides allowance for a Letter of Recommendation for Exemption that can be submitted by a qualified archaeologist should they deem it appropriate.</p> <p>The assessment should include any other heritage resources that may be impacted such as built structures over years old, sites of cultural significance</p> | An independent specialist will be appointed to prepare a Heritage Impact Study for the Proposed Project, which will be made available to SAHRA for review and comment. | Section 9.4 |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
|---|-----------------------|--|---|--|
| | | associated with oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscapes or viewsapes must also be assessed. Further comments will be issued upon receipt of the above and the Scoping and EIA reports inclusive of appendices. | | |
| Community Leadership and Community | | | | |
| Councillor Phillip Mntombi (Mmadithlokwa) | 30 July 2021 | Can Tharisa consider giving the dumps to the communities to use as aggregate for cement making for example? | These inputs/ideas will be forwarded to Tharisa's Social and Labour Plan (SLP) implementation team for consideration as part of the Proposed Project. Further feedback pertaining to the possibility of the use of waste rock by communities for third party use will be provided in the EIA and EMP. | N/A |
| Councillor Phillip Mntombi (Mmadithlokwa) | 30 July 2021 | It is painful that the leadership went to the DMRE to present a proposal for the community to use the waste rock dumps as aggregate, the DMRE referred the leadership back to Tharisa and the proposal was not considered. | | |
| Councillor Ellen Dikgang (Bokamoso) | 30 July 2021 | What we are doing today does not assist the communities at all. There have been multiple proposals from businesses around Bokamoso that were submitted to Tharisa, requesting access to the waste rock dumps for brick making, etc. No feedback has been received to date. | | |
| | 30 July 2021 | Councillor Philip was at DMRE to propose the use of the waste rock dumps as aggregate, there are businesses in the communities that are qualified and could use the waste rock dumps to benefit their businesses. | | |
| Ezekiel Ndlovu (Mmadithlokwa) | 8 December 2021 | Tharisa must give us a written document that outlines the community benefits, including the area identified for resettlement as well as the house plan. | The Proposed Project forms part of the existing approved operations and as such the development of the proposed WRD's will not generate any | Section 4.2.3 |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| Thabiso (Lapologang) | 8 December 2021 | How will we benefit as a community if this Proposed Project goes ahead? Please provide the project benefits in writing. | <p>additional employment opportunities. The need for projects to provide community benefits is however noted by Tharisa. As part of the EIA and EMPr phase of the Proposed Project, further consideration will be given to possible benefits associated with the Proposed Project.</p> <p>In terms of resettlement, Tharisa is planning on resettling members of the Lapologang and Mmaditlhokwa communities. This however forms part of a separate process that is being managed by Tharisa and does not form part of the Proposed Project.</p> <p>Issues regarding the availability of pastoral land for livestock are outside the scope of the project. These issues have been forwarded to Tharisa for consideration.</p> | |
| Mr Mampuru (Mmaditlhokwa) | 8 December 2021 | How will the community benefit from the Proposed Project? | | |
| BC Chairperson (Bokamoso) | 14 December 2021 | We do not benefit anything from Tharisa. | | |
| Councillor Phillip Mntombi (Mmaditlhokwa) | 30 July 2021 | We have waste rock dumps that will encroach on the community in a land that does not belong to Tharisa, the leadership would like to obtain additional information regarding the socio-economic benefits before giving approval to the project to avoid being labelled as sell outs. | | |
| Lie Mokamedi (Bokamoso) | 30 July 2021 | The purpose of the meeting is Tharisa telling the leadership that they have a project that they would like to initiate, the leadership cannot help the mine with its operations. Especially when there are no job opportunities associated with the project. This presentation should include the socio-economic benefits associated with the project. | | |
| | 30 July 2021 | The leadership cannot support the project when the community is not benefiting. Tharisa should take the project to the community and outline the socio-economic benefits, as the community is the one that suffers. Tharisa is consulting with the community because they are looking for a way to get the project through to the DMRE as they know they cannot do this project without the community. | | |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| Tieho Ncheche (Lapologang) | 15 August 2021 | <p>What are the benefits of the project for the communities?</p> <p>What are the opportunities for Small, Medium and Micro Enterprises for this project?</p> <p>We are having problems with access to pastoral land for our livestock. The electric fence surrounding the Tharisa mine is electrocuting our livestock every day. In terms of animal rights, will Tharisa provide pastoral land for our livestock?</p> | <p>The Proposed Project forms part of the existing approved operations and as such the development of the proposed WRD's will not generate any additional employment opportunities. The need for projects to provide community benefits is however noted by Tharisa. As part of the EIA and EMPr phase of the Proposed Project, further consideration will be given to possible benefits associated with the Proposed Project.</p> <p>In terms of resettlement, Tharisa is planning on resettling members of the Lapologang and Mmaditlhokwa communities. This however forms part of a separate process that is being managed by Tharisa and does not form part of the Proposed Project.</p> <p>Issues regarding the availability of pastoral land for livestock are outside the scope of the project. These issues have been forwarded to Tharisa for consideration.</p> | |
| Godfrey Sedimerd (Mmaditlhokwa Community Leadership) | 29 April 2022 | How can the community members benefit from this proposed project? | <p>Issues regarding the availability of pastoral land for livestock are outside the scope of the project. These issues have been forwarded to Tharisa for consideration.</p> | |
| Unemployment Forum (UF) representative 1 (Bokamoso) | 14 December 2021 | People from Bokamoso do not get employed by Tharisa. The posts from Tharisa require a very high qualification and most of the community members do not have those qualifications. For example, Tharisa will want a Grade 12 qualification and not many people in this community have a grade 12. | With reference to Section 8.2, a meeting was scheduled with Bokamoso on 14 December 2021. It should be noted that SLR was prevented from presenting the Proposed Project to the community who indicated their unwillingness to participate in the process due to pending SLP related issues | N/A |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| UF representative 1 (Bokamoso) | 14 December 2021 | The General Worker (GW) posts at Tharisa require a Grade 12 qualification. This community does not have many people with a Grade 12 qualification. Tharisa has brought their interns here to the meeting, whereas none of us have ever been called as interns to work for Tharisa. | between the mine and the community. Addressing existing grievances and SLP related issues from Bokamoso is outside of the scope of the Proposed Project. These comments have however been recorded and are presented in this Scoping Report for completeness purposes. | |
| UF representative 1 (Bokamoso) | 14 December 2021 | Tharisa is also not upskilling us as a community so that we can qualify for some of these posts. | These issues will be forwarded to the Tharisa’s SLP implementation team for consideration. | |
| UF representative 2 (Bokamoso) | 14 December 2021 | In this community we could even assist in the driving of the trucks that make a daily noise. | | |
| UF representative 2 (Bokamoso) | 14 December 2021 | We need more learnerships from Tharisa and Tharisa has never given this to us. | | |
| UF representative 2 (Bokamoso) | 14 December 2021 | We do not have high qualifications in this community, for example we do not have many people with a Grade 12 qualifications. There is no need for GWs to have a Grade 12 qualification. For example, SAMANCOR only requires GWs to have at least a Grade 10 qualification. | | |
| UF representative 1 (Bokamoso) | 14 December 2021 | Ward 27 is mostly populated by a poor demographic but there has been no skills development for the community from Tharisa. | | |
| UF representative 1 (Bokamoso) | 14 December 2021 | There are GWs at Tharisa and we do not know where they come from because they do not come from our community. | | |
| Community Member 1 (Bokamoso) | 14 December 2021 | Tharisa should also provide us with opportunities to work internationally. | | |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| Community Member 6 (Bokamoso) | 14 December 2021 | <p>We would like 100 opportunities for the community from Tharisa. These include:</p> <ul style="list-style-type: none"> • 20 positions for general workers; • 50 bursaries; and • 30 opportunities for the BC. <p>Tharisa has only provide two general worker posts to the community of Bokamoso.</p> | <p>With reference to Section 8.2, a meeting was schedule with Bokamoso on 14 December 2021. It should be noted that SLR was prevented from presenting the Proposed Project to the community who indicated their unwillingness to participate in the process due to pending SLP related issues between the mine and the community. Addressing existing grievances and SLP related issues from Bokamoso is outside of the scope of the Proposed Project. These comments have however been recorded and are presented in this Scoping Report for completeness purposes.</p> <p>These issues will be forwarded to the Tharisa's SLP implementation team for consideration.</p> | N/A |
| Community Member 3 (Bokamoso) | 14 December 2021 | Since the Tharisa operations have surrounded us, they should provide transport in the form of school buses for our children at the local school. | | |
| Mokgadi (Bokamoso) | 14 December 2021 | General workers should not fail interviews. From my understanding, GW is simple work and people can easily be hired for it as it only requires your body and your mind. Fitness tests are the only things we should be failing. | | |
| BC Chairperson (Bokamoso) | 14 December 2021 | Tharisa must give the BC a vender number. | | |
| BC Chairperson (Bokamoso) | 14 December 2021 | Tharisa must not negotiate business opportunities with certain individuals. There are different forums in the community that they can liaise with to give the community the opportunities. This includes the BC, the UF and the Ward Councillor. An email can be sent to the secretary of the BC to pass on opportunities for the businesses in the community. | | |
| BC Chairperson (Bokamoso) | 14 December 2021 | The school budget needs to increase. We need a bigger school within the community. | | |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| BC Chairperson (Bokamoso) | 14 December 2021 | The community must be provided with 450 food parcels from Tharisa by Friday the 17 th of December 2021 if they want the negotiations to continue. If the BC can supply food parcels for 400 – 450 households then Tharisa can assist with ease. | <p>With reference to Section 8.2, a meeting was scheduled with Bokamoso on 14 December 2021. It should be noted that SLR was prevented from presenting the Proposed Project to the community who indicated their unwillingness to participate in the process due to pending SLP related issues between the mine and the community. Addressing existing grievances and SLP related issues from Bokamoso is outside of the scope of the Proposed Project. These comments have however been recorded and are presented in this Scoping Report for completeness purposes.</p> <p>These issues will be forwarded to the Tharisa's SLP implementation team for consideration.</p> | N/A |
| BC Chairperson (Bokamoso) | 14 December 2021 | We can get yellow machinery from Barloworld and get it if Tharisa would give us business opportunities of that kind. | | |
| BC Chairperson (Bokamoso) | 14 December 2021 | Tharisa must give us at least five (5) computers with printers because our youth need them for their CVs and even our school children can use the computers. | | |
| BC Chairperson (Bokamoso) | 14 December 2021 | Tharisa needs to engage with ward councillor and his leadership to give the community bursaries. | | |
| BC Chairperson (Bokamoso) | 14 December 2021 | I have sat in meetings with Tharisa, and I have written several letters to Tharisa asking them to assist the community with at least food parcels and have never received any responses since 2016. | | |
| BC Chairperson (Bokamoso) | 14 December 2021 | Tharisa has done nothing for the community since 2008. | | |
| BC Chairperson (Bokamoso) | 14 December 2021 | Tharisa must put in writing how the community is going to benefit from the Proposed Project. Since Tharisa began its operations in 2008, there has not been a single development that they have done for the community of Bokamoso. I have worked for Tharisa as well and have since resigned. There has not even been a water tank in the community from Tharisa even though we are the most affected community. | | |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| | | If Tharisa wants to test us and continue with the WRD we will do what we have done with SAMANCOR and shut down Tharisa. | With reference to Section 8.2, a meeting was scheduled with Bokamosa on 14 December 2021. It should be noted that SLR was prevented from presenting the Proposed Project to the community who indicated their unwillingness to participate in the process due to pending SLP related issues between the mine and the community. Addressing existing grievances and SLP related issues from Bokamosa is outside of the scope of the Proposed Project. These comments have however been recorded and are presented in this Scoping Report for completeness purposes. | N/A |
| BC Chairperson (Bokamoso) | 14 December 2021 | The BC knows there are many opportunities that could come from the mine, and we are ready. We know of the opportunities particularly in the logistics sector. | | |
| Moloko Matshubeni (Bokamoso) | 14 December 2021 | Tharisa advertises posts for the broader community before they advertise them solely for us, first. For example, by making the posts open via email, which makes it open to everyone in South Africa before we can apply and more likely than not, there are more qualified candidates than us. Tharisa should first look for candidates within the community before looking for candidates outside our community, so that we have an advantage. | These issues will be forwarded to the Tharisa's SLP implementation team for consideration. | |
| Gibson Masena (Mmaditlhokwa) | 8 December 2021 | The WRD will be close to our school. We must benefit from the development. While Tharisa is blasting, Lonmin and Sibanye provide Tharisa with staff. As a community we are not benefitting. | The scope of the project has been revised following initial engagements with the community. The Proposed Project will be located within previously backfilled areas of the east and west pits and disturbed areas. The West WRD 2 (which was adjacent to the school) has been removed from the scope of the project. The proposed West OG WRD is located adjacent to Mmaditlhokwa but will not be located within the community. | Section 4.2.3.2 |
| Christina Mudau (Mmaditlhokwa) | 8 December 2021 | On the map that is on slide 5 of the presentation that was given by SLR, there is the yellow shape that is above the proposed West WRD 2, that is the local school. Tharisa is placing the dump close to our children's school. Our children will inhale dust and pollution and get affected by the vibrations. We refuse. It is not fair as our children are inhaling air pollution. Tharisa does not care for us, will the school be relocated and where is Tharisa planning to relocate it to? | | |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| Councillor Phillip Mntombi (Mmaditlhokwa) | 30 July 2021 | Are the proposed waste rock dumps located within the community or do they encroach onto the community? | The proposed West OG WRD is located adjacent to Mmaditlhokwa but will not be located within the community. | Section 4.2.3.2 |
| Elias (Did not sign the register) | 15 August 2021 | Are you aware of the impacts of the proposed Waste Rock Dumps (WRDs) to the community? The community is currently suffering from the impacts as a result of the existing WRDs and other mining operations. What measures will be in put in place to manage the dust, noise and air quality impacts experienced by the community. | <p>The detailed impact assessment, informed by specialist investigations, together with detailed mitigation measures will be provided in the EIA and EMPr. SLR has appointed specialists to undertake the noise and air quality studies for the Proposed Project (refer to Section 9.4).</p> <p>It is important to note that the Proposed Project does not require any blasting activities.</p> | Section 9.4 |
| Thabo Maluleka (Lapologang) | 8 December 2021 | We do not sleep at night because of the noise from the blasting and the vehicles. The dust is also unbearable. | | |
| Tshepo Jonas (Mmaditlhokwa) | 15 August 2021 | Dust is so visible from the communities? How much dust are communities inhaling daily? The establishment of the additional WRDs will only worsen the situation. | | |
| Zanethemba Badula (Bokamoso) | 14 December 2021 | <p>Since 2015, Tharisa started with the blasting. The trucks have been making a lot of noise and the dust has been excessive and we have reported all these issues to the councillor, and we do not receive any responses. Tharisa has not even provided us with assistance with these issues since.</p> <p>The proposed WRD will not go ahead in our community if you do not take our issues and concerns seriously.</p> | | |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| Lesiba Mookamedi (Bokamoso) | 15 August 2021 | <p>Please advise if the area been assessed to determine whether it was safe? What is the distance from the new WRDs to the community? Please advise what is the extent of the buffer in terms of health and safety? What is the buffer that is allowed in terms of the DMRE regulations?</p> <p>SLR should undertake an assessment to identify the environmental issues such as noise from blasting, air quality issues etc. This would inform the discussion with the community leadership. The leadership cannot convince the community to accept the project when people are suffering from the impacts as a result of the existing WRDs and other mining operations. This project will not be supported without answers. The students from communities will be affected by the noise from the Proposed Project.</p> <p>Please provide the leadership with mitigation measures to address the noise and air quality issues from Tharisa</p> | <p>The detailed impact assessment, informed by specialist investigations, together with detailed mitigation measures will be provided in the EIA and EMPr. SLR has appointed specialists to undertake the noise and air quality studies for the Proposed Project (refer to Section 9.4).</p> <p>It is important to note that the Proposed Project does not require the need for blasting activities.</p> | Section 9.4 |
| Nonti and other community members (Lapologang) | 8 December 2021 | Blasting and the explosives is causing cracks on our windows, even the plates and it scares the children. The fumes from the dust is also affecting our health. The network signal is also bad because of the blasting. | | |
| Given (Lapologang) | 8 December 2021 | How far does the blasting travel in metres so we know how many metres we should be relocated to? | | |
| Christina Mudau (Mmaditlhokwa) | 8 December 2021 | Tharisa wants more WRDs, and it seems as though we are a nuisance to them for residing in the area where they want to operate. Tharisa only wants to benefit themselves. We already experience impacts like | | |

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| | | <p>vibrations from blasting and dust pollution from the blasting.</p> <p>Why were specialists not brought in a few years ago to do the assessments? The blasting affects our properties. Our water is also contaminated. Our houses are no longer balanced, they tilt and as a result our homes are flooding when it rains.</p> | <p>The detailed impact assessment, informed by specialist investigations, together with detailed mitigation measures will be provided in the EIA and EMPr. SLR has appointed specialists to undertake the noise and air quality studies for the Proposed Project (refer to Section 9.4).</p> | <p>Section 9.4</p> |
| Cecilia Hanyane (Mmaditlhokwa) | 8 December 2021 | <p>When Tharisa wants something from the community, they can come into the community to engage with us. We have underlying water issues, the water we drink is contaminated. There is also a blasting issues that has affected our elderly and our children. The elderly people are becoming sick as a result of the dust in the area. Furthermore, it is heart breaking to see our children run around like they are crazy and faint during blasting.</p> | | |
| Mr Mampuru (Mmaditlhokwa) | 8 December 2021 | <p>On the issue of the environment, we need a proper monitoring plan. We are grateful that you are here doing the assessment and compiling and environmental report.</p> | | |
| Mr Mampuru (Mmaditlhokwa) | 8 December 2021 | <p>We understand that you may not have all the answers at this stage because you still need to do the assessments but as a community as well, we need to form committees and teams that will deal with all the issues we have. We need to undo the mistake of the past leadership. We need proper direction as a community before we engage with the SLP team.</p> | | |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| Tebogang Makoanane (Lapologang Community Leadership) | 29 April 2022 | The waste rock dump (WRD) in the west looks close to Lapologang. How will the impacts of dust and blasting affect our community? | The detailed impact assessment, informed by specialist investigations, together with detailed mitigation measures will be provided in the EIA and EMPr. SLR has appointed specialists to undertake the noise and air quality studies for the Proposed Project (refer to Section 9.4). It is important to note that the Proposed Project does not require the need for blasting activities. | Section 9.4 |
| Tseere Mokwala (Mmaditlhokwa Community Leadership) | 29 April 2022 | Community members close to the mine have had issues with the impacts from mining activities. | | |
| John Salang (Mmaditlhokwa Community Leadership) | 29 April 2022 | The proposed infrastructure is close to the Lapologang community. There are already existing mining activities that affect the community e.g., noise pollution from the blasting and dust – how do you as a consultant expect that the new infrastructure will affect us? | | |
| Tseere Mokwala (Mmaditlhokwa Community Leadership) | 29 April 2022 | How long with these reports take as I do not want to agree or form an opinion, yet. I will engage further on issues after the Scoping Report. | The reports will be made available for review and comment for a period of 30 days. The reports will be distributed in May 2022. | N/A |
| John Salang (Mmaditlhokwa Community Leadership) | 29 April 2022 | On the west operations of the mine, I see that there is proposed backfilling in the pits. How was the rehabilitation done for the pit in the east? | The rehabilitation of the open pits still need to be done. Currently in-pit dumping takes place. | N/A |
| Mr Mampuru (Mmaditlhokwa) | 8 December 2021 | We as Black people do not take each other seriously because if this were a white person addressing us right now, instead of a Black person, we would have listened to them. | Noted. | N/a |
| Elias (Did not sign the register) | 15 August 2021 | Let me refer you to chapter 4 of the Mining Charter in terms of establishment of the WRDs. I would like to | As part of the proposed project, an independent Air Quality Specialist will be appointed. It is important to | N/A |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| | | request SLR to undertake a health survey for all affected communities as part of the environmental assessment process. As the community is already suffering from the impacts because of the existing WRDs and other mining operations | note that as part of their work, a preliminary health screening process will be undertaken assessing human health risk due to exposures through inhalation only. In this regard, the preliminary health screening will cater for the following: | |
| Tshepo Jonas (Mmaditlhokwa) | 15 August 2021 | The Department of health together with the mine needs to conduct a health survey to ensure that communities are not harmed by the Proposed Project. SLR is advised to consult with the mine prior to holding meetings with the community. The community would like to be relocated to ensure that they do not suffer from the environmental impacts because of the Tharisa mining operations. | 1. Hazard Identification: The specialist will examine whether the Proposed Project has the potential to cause harm to humans and/or ecological systems, and if so, under what circumstances. This is covered by the AQIA for the inhalation pathway by identifying the pollutants that are/will be emitted, and ranking these based on toxicity (identifying the pollutants that are likely to impact on human health). 2. Dose-response assessment: The specialist will gather information to determine the numerical relationship between exposure and effects. This is covered by the AQIA for the inhalation pathway by quantifying the amount of pollution emitted, and determining the pollution concentrations that will impact on human health by screening these against ambient air quality standards and guidelines that are there to protect human health. | |
| Tshepo Jonas (Mmaditlhokwa) | 15 August 2021 | Please undertake a risk assessment before you schedule community meetings. SLR has stated that the meeting held forms part of the engagement process, however, this could be perceived as approval by community members. It would therefore make sense for the specialist studies to be undertaken first to ensure that communities can be provided with answers. | 3. Exposure assessment: The specialist will examine what is know about the frequency, timing and levels of contact with the Proposed Project. This is covered by the AQIA for the inhalation pathway by quantifying the amount of pollution emitted, and determining the pollution concentrations that will impact on human health by screening these against ambient air quality standards and guidelines that are there to protect human health. | |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| | | | <p>4. Risk Characterisation Risk: Includes the estimated or measured exposure level for each stressor and plant or animal population, community, or ecosystem of concern. This is covered on a screening level as part of the AQIA, where the modelled impacts are screened against air quality standards and guidelines, thus if these “flag”: then a more in-depth assessment is required.</p> <p>In terms of resettlement, Tharisa is planning on resettling members of the Lapologang and Mmaditlhokwa communities. This however forms part of a separate process that is being managed by Tharisa and does not form part of the Proposed Project.</p> | |
| Elias (did not sign the register) | 15 August 2021 | <p>The WRDs will result in clearance of additional land. The DMRE, SLR and Tharisa should undertake a joint inspection to assess the health and safety impacts of the project. Please provide documents that show that SLR together with Tharisa, consulted with the DMRE.</p> <p>Please note that the property values within the communities are decreasing due to the environmental issues from Tharisa’s mining operations. It is a waste of time for the community leaders to sit with SLR to raise major concerns which SLR is failing to respond to.</p> | <p>As part of the Proposed Project a pre-application meetings was held with the DMRE. A copy of the meeting minutes is included in Appendix C.</p> <p>Tharisa is planning on resettling members of the Lapologang and Mmaditlhokwa communities. This however forms part of a separate process that is being managed by Tharisa and does not form part of the Proposed Project.</p> <p>The purpose of the meetings are to provide I&APs with an overview of the Proposed Project and to record any issues and concerns that will be used to inform the environmental authorisation process. Given that the environmental authorisation process</p> | Appendix C |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| | | | is in the initial stage it is not possible to provide answers to all questions raised at this time. As part of the EIA and EMP phase of the project, answers to questions raised (within SLR scope) will be provided. Further to this, feedback meetings will be set up during the EIA and EMP phase to provide feedback to I&APs regarding issues and concerns raised, the findings of the specialist studies as well as the impacts and mitigation measures identified for the Proposed Project. | |
| Former Ward 27 Councillor (Bokamoso) | 14 December 2021 | The rocks from the WRD also fall onto our roads. | Noted, this issue has been forwarded to Tharisa for consideration. | N/A |
| Councillor Ellen Dikgang (Bokamoso) | 30 July 2021 | The leadership cannot always come to approve the project when the community is not benefiting. The attendance register should not be submitted to the DMRE until the socio-economic benefits of the project are outlined. | Attendance at meetings with community leadership does not provide any form of approval for the Proposed Project and the attendance register is only used to provide proof that SLR has consulted with I&APs. | N/A |
| Thabo Ncheche (Lapologang) | 15 August 2021 | The attendance register will be used by SLR as proof of consultation to the DMRE. | | |
| Thabo Ncheche (Lapologang) | 15 August 2021 | The leadership is not attending this meeting to give Tharisa approval to establish the WRDs. Please tell the DMRE that the leadership is saying a big "NO" to the project. | Your objection to the Proposed Project is noted. | N/A |
| Kedibone Khumalo (Mmadithlokwa) | 8 December 2021 | How do you agree to the WRD project when you are busy with a pending relocation process with the community? The Proposed Project will result in even more negative impacts such as the impact of dust that we are already experiencing? | Tharisa requires additional space for the storage of waste rock to allow for the continuation of existing mining activities. | Section 9.4 |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| | | | <p>The scope of the project has been revised following initial engagements with the community. The Proposed Project will be located within previously backfilled areas of the east and west open pits and disturbed areas. The proposed West OG WRD will be located adjacent to Mmadithlokwa. It follows that various specialists have been appointed to assess the impact that the Proposed Project will have towards sensitive receptors including communities.</p> <p>In terms of resettlement, Tharisa is planning on resettling members of the Lapologang and Mmadithlokwa communities. This however forms part of a separate process that is being managed by Tharisa and does not form part of the Proposed Project.</p> | |
| Councillor Ellen Dikgang (Bokamoso) | 30 July 2021 | We have made attempts to engage with Tharisa regarding environmental issues such as the blasting methods used (which is very dangerous), noise and dust and we did not get any assistance. We, therefore, cannot sit here and approve the project. The communities will be asking questions which we are not able to answer. We, therefore, please with SLR and Tharisa to meet us halfway. | The purpose of the meetings are to provide I&APs with an overview of the Proposed Project and to record any issues and concerns that will be used to inform the environmental authorisation process. Given that the environmental authorisation process is in the initial stage it is not possible to provide answers to all questions raised at this time. As part of the EIA and EMPr phase of the project, answers to questions raised (within SLR's scope) will be provided. Further to this, feedback meetings will be set up during the EIA and EMPr phase to provide feedback to I&APs regarding issues and concerns raised, the findings of the specialist studies as well as | Section 9. |
| Thabo Ncheche (Lapologang) | 15 August 2021 | The leadership is upset, we do not understand if SLR is failing to deliver or if it is not prepared enough to answer our questions. If SLR cannot provide answers to us as the leadership, how will it provide answers to the communities? | | |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| | | SLR is failing us, we have had two meetings and SLR is still failing to provide answers to our questions. Please do your research. | the impacts and mitigation measures identified for the Proposed Project. | |
| Thabo Ncheche (Lapologang) | 15 August 2021 | <p>I signed my name on the register not to give approval for the project but to say that I was here listening to the lies of the consultants. Something similar was done when mining in the west pit commenced. Tharisa said they would not blast, however, they started to blast eventually. SLR will take the attendance register and attached it to their report, stating that the project can continue. We signed to say we are starting negotiations for Tharisa to establish additional WRDs.</p> <p>For the next meeting, all representatives from Tharisa, DMRE and farmers must attend.</p> | <p>Attendance at meetings does not provide any form of approval for the Proposed Project and the attendance register is only used to provide proof that SLR has consulted with I&APs.</p> <p>Please note that the DMRE and farmers will also be invited to attend the community feedback meetings.</p> | N/A |
| Elisa (did not sign the register) | 15 August 2021 | Mr Mokotedi as a representative of Tharisa has heard all the concerns raised. The leadership is not happy about the presentation. Please ensure that meeting minutes are submitted to Tharisa to provide them with feedback from this meeting. | Minutes of the community meetings were compiled and are included in Appendix C. Further to this, all comments and concerns raised by communities have been included in the Scoping Report for consideration by the DMRE. | Appendix C |
| Lie Mokamedi (Bokamoso) | 30 July 2021 | How many tons of waste rock dumps will be produced because of the Proposed Project and how long is the project? | <p>The Proposed Project will have the following maximum storage capacity:</p> <ul style="list-style-type: none"> West OG WRD: Approximately 35.31 million m³ (Approximately 19.6 months of storage); and East OG WRD: Approximately 26.26 million m³ (approximately 14.6 months of storage). | Section 4.2.3 and Appendix C |
| George (Lapologang) | 8 December 2021 | From the research I have done, a mine has never been stopped from placing a WRD. There has only been one | SLR is not able to comment on the decisions made by the DMRE in terms of other projects in South Africa. | N/A |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| | | mine that has been stopped and that was in 1998 in Welkom, Free State. Therefore, we need an honest response from Tharisa on whether they will go ahead with the WRD or not. That way we know how to approach Tharisa. | In terms of the Proposed Project, Tharisa is planning to establish additional WRD's (West and East OG WRD) and will therefore submit the EIA and EMP to the DMRE for decision making purposes. Only the DMRE can decide whether the Proposed Project can commence or not. | |
| Tieho Ncheche (Lapologang) | 15 August 2021 | The simplest way to communicate with the task team and the leadership can be via WhatsApp and email. | In order to meet the needs of all individuals within communities, SLR makes use of various forms of communication platforms. This includes a combination of SMS notifications, email notifications, focussed meetings with the leadership/ ward councillors, general community meetings. In addition to this, loud hailing is also used to inform community members of the planned meetings. | Section 8.2 |
| Lesiba Mookamedi (Bokamoso) | 15 August 2021 | There are community members who do not have smart phones to access the project related information, as such the leadership would prefer for community meetings to be held. This will allow the elderly to participate in the process. | | |
| Elias (Did not sign the register) | 15 August 2021 | The proposed line of communication (i.e., the use of email, WhatsApp and SMS) is only effective when communicating with the leadership. These methods of communication will not be effective for the bulk of community members. | | |
| Tshepo Jonas (Mmaditlhokwa) | 15 August 2021 | The ideas presented by SLR regarding community engagement are acceptable, however, they target the youth. Elderly people who do not have access to the website still need to be engaged. As such, community meetings will be required to ensure that the elderly are able to participate in this process. | | |
| Elias (Did not sign the register) | 15 August 2021 | Did SLR consult with the DMRE? Or are they only starting to consult with the community leadership? Can we as the leadership receive the presentation that was done for the DMRE? | A project announcement meeting was held with the community leadership on the 30 July 2021. A pre-application meeting was also held with the DMRE on 6 August 2021. Of copy of the DMRE pre-application meeting minutes (which includes a copy of the | N/A |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| | | | presentation) is included in Appendix C. It is important to note that the project description for the Proposed Project has been revised since the onset of the project and as such certain project components presented at the pre-application meeting no longer form part of this environmental authorisation process. | |
| Ezekiel Ndlovu (Mmaditlhokwa) | 8 December 2021 | On slide 8 of the presentation, you mentioned that the process where you are in right now will run from May to December. I do not understand this as it is December right now, why did you only come to us now in December? | At the time of the presentation, the project was in the pre-application phase. SLR was not able to schedule meetings earlier due to COVID restrictions. It should also be noted that the pre-application phase also included preparation of public participation materials such as a BID, site notices and meetings with authorities and the community leadership. These activities form part of the pre-application phase and were undertaken prior to the community meetings. | Section 8.2 Appendix C |
| Ditshotlo Moleme (Task Team, Mmaditlhokwa) | 15 August 2021 | Please go back and do your homework first before you come to the communities to present the project. SLR should also make sure that all relevant stakeholders are included in the consultation process. | Initial meetings were arranged with community leadership/ ward councillors (also known as the task teams) at the onset of the Proposed Project. These initial meetings were specifically focussed on confirming who all the relevant community stakeholders include and to obtain confirmation regarding the best mechanisms of communicating with the communities and disseminating information within the communities. Given that the environmental authorisation process is in the initial stage it is not possible to provide answers to all questions raised at this time. As part of the EIA and EMPr phase of the project, answers to questions | N/A |
| Dipuo Ubisse (Bokamoso) | 15 August 2021 | SLR should come prepared to meetings, especially given that there was an initial consultation that was undertaken. We expect SLR to have all the answers for this project. | | |

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| | | | (within SLR's scope) raised will be provided. Further to this, feedback meetings will be set up during the EIA and EMPr phase to provide feedback to I&APs regarding issues and concerns raised, the findings of the specialist studies as well as the impacts and mitigation measures identified for the Proposed Project. | |
| Philip Mntombi (Mmaditlhokwa) | 15 August 2021 | <p>We are still fighting with Tharisa because of existing environmental issues, yet they would like to establish additional waste rock dumps?</p> <p>I can't allow you to conduct public participation in my community as I know the pain of my community. I am fighting with the community as if I agreed for Tharisa to blast.</p> <p>This process will continue without our agreement, as per the environmental authorisation process outlined on page 9 of the presentation. It is painful to allow Johannesburg companies to come and benefit while the community is suffering.</p> | Your objections have been noted. | N/A |
| George (Lapologang) | 8 December 2021 | <p>Tharisa must not hide anything from us so that we can have a clear idea of a way forward. Another thing is that we need to know if Tharisa has agreed to go ahead/is going ahead with the Proposed Project or not, so that we do not waste our time in these meetings and put forward our views on the Proposed Project when Tharisa will not respond to our views. We need to know if Tharisa will take into consideration the communities' issues on the</p> | SLR is the independent EAP appointed by Tharisa to undertake the environmental assessment process for the Proposed Project. All comments raised during the meeting are noted and will be collated and submitted to the DMRE for decision making together with the EIA and EMPr. The ultimate decision to approve the Proposed Project is made by the DMRE and is based on the findings of the environmental impact assessment process. | N/A |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| | | ashes/dust. This way we know how to reach a fair consensus with Tharisa. Do not lie to us or hide things from us. We need to know that at the end of the day, Tharisa is going to do what they want to do. That way we can have one voice as a community. | | |
| Thabo Paelwana (Mmaditlhokwa) | 8 December 2021 | We need to know what the project is about. You are speaking a lot of English and old people don't understand English. We need an explanation again on what is going to take place. | Noted. A separate session was held earlier with the elderly people to present the project to them without using the technical language. | N/A |
| Aubrey Thobejane (Mmaditlhokwa) | 8 December 2021 | You speak about the application that will be submitted for the project; however, operations have already commenced. Tharisa is blasting. | Tharisa mine has existing authorisations for their current operations, including the mining of the two open pits which would result in blasting at specified time intervals. The Proposed Project has not commenced and can only commence with all necessary approvals have been obtained. The Proposed Project components do not require blasting. | N/A |
| Aubrey Thobejane (Mmaditlhokwa) | 8 December 2021 | The constitution states that people need to be the centre in anything that is done. You say you are using NEMA but what about specific environmental management acts? Section 2 of NEMA states that environmental management must always place people and their needs at the forefront of its concerns including physically, psychologically, socially, and culturally. Did Tharisa apply the 7 (seven) principles in NEMA? It shows that Tharisa does not care for the people. | Noted. The environmental assessment process takes into account specific environmental management acts that are relevant to the project. The principles of NEMA will be applied as part of the environmental assessment process. | Section 5 |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| Kedibone Khumalo (Mmaditlhokwa) | 8 December 2021 | Please change the meeting times with the communities from the morning to be at 14:00 or 16:00. | Noted, community meetings in future will be scheduled between 14:00-16:00. | N/A |
| Christina Mudau (Mmmaditlhokwa) | 8 December 2021 | Has our area changed from a residential area similar to when our ancestors resided here? Is it now a mining area on maps? I know the history of Mmaditlhokwa. It is a mining area, and it is not residential area, but it is still the government's responsibility to engage people within the mining area when making decisions such as the Proposed Project. | It should be noted that Mmaditlhokwa is not a formalised residential area it is located within the mining right area. | N/A |
| Nonti (Lapologang) | 8 December 2021 | Where will be relocated since the rocks/waste are going to be dumped here? We are already suffering from diseases such as asthma and TB from the current WRDs that are surrounding us. | Resettlement falls outside the scope of this environmental process. This question has however been recorded as part of this process for completeness purposes and will be provided to the Tharisa's SLP team for consideration. | N/A |
| Dipuo (Lapologang) | 8 December 2021 | What will happen to the people when they are resettled? Where will they be taken to? | | |
| Michael (Lapologang) | 8 December 2021 | What about the relocation issues? Relocation has been pending for a long time and Tharisa wants to go on with another WRD. My suggestion is that Tharisa relocates us and then they continue to do what they want to do | | |
| All Community Members (Lapologang) | 8 December 2021 | This environmental process must run concurrently with the relocation process. Is the relocation still happening? Are we still going or not? We are surrounded by dumps, and we cannot be living like this, we need a solution. | | |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| Thabo Paelwana (Lapologang) | 8 December 2021 | Where are you relocating the people now that you have decided to deposit waste rock here or will we remain here in Mmaditlhokwa? | Resettlement falls outside the scope of this environmental process. This question has however been recorded as part of this process for completeness purposes and will be provided to the Tharisa's SLP team for consideration. | N/A |
| Mapule Tiro (Mmaditlhokwa) | 8 December 2021 | My mother was relocated by Tharisa mine before to Mmaditlhokwa. I do not know of the law that allows for people to be relocated multiple times to allow for the expansion of the mine. Black people are offered RDP houses which end up cracking while farmers south of the mine are given money as part of the relocation process. | | |
| Cecilia Hanyane (Mmaditlhokwa) | 8 December 2021 | All Tharisa cares about is making money, you don't care about us, why don't you relocate us so that you can make money? Why are white farmers south of the mine given money to relocate? How long does it take for Tharisa to find a suitable land for relocation? Please call the executives to come to the communities and address us. They must not send you. | | |
| Kedibone Khumalo (Mmaditlhokwa) | 8 December 2021 | Can the issue of relocation please be addressed before Tharisa implements any projects? We want to relocate, please provide us with a house plan. | | |
| Mr Mampuru (Mmaditlhokwa) | 8 December 2021 | The process of relocation started in 2012, to date this process has not been finalised, the past leadership failed to take responsibility to push the mine to relocate us. There was lack of leadership structures previously but thus will be resolved with the current leadership. | | |
| Thabo Paelwana (Mmaditlhokwa) | 8 December 2021 | Tharisa also needs to come directly to the people. We know of Thabang Maluke (Tharisa representative) and perhaps he now fears the community and has sent | | |

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| | | <p>Gordon instead. We need direction from Tharisa. Please provide us with a date of resettlement. We want the directors to come engage with the community themselves.</p> <p>White people that used to live in Mmaditlhokwa were given money to relocate. We are assuming that Tharisa would have to build another school before the project commences. We are also assuming that the community would also benefit before the project commences. We are willing to relocate provided there are benefits for us as a community.</p> | <p>Resettlement falls outside the scope of this environmental process. This question has however been recorded as part of this process for completeness purposes and will be provided to the Tharisa's SLP team for consideration.</p> | N/A |
| Gibson Masena (Mmaditlhokwa) | 8 December 2021 | We want the detailed steps that are to be taken by Tharisa when relocating us? | | |
| Adam Pele (Mmaditlhokwa) | 8 December 2021 | We want Tharisa to come here to the community so that we can show them the environmental damages directly. What about the relocation issue? | | |
| Christina Mudau (Mmaditlhokwa) | 8 December 2021 | The executives of Tharisa (such as the MDs and CEOs) must come to Mmaditlhokwa and see what is happening in this community for themselves. Tharisa does not respect us, they do not value us meanwhile they are making billions. Please relocate us. | | |
| Mr Mampuru (Mmaditlhokwa) | 8 December 2021 | The process of relocation started in 2012, to date this process has not been finalised, the past leadership failed to take responsibility to push the mine to relocate us. There was lack of leadership structures previously but thus will be resolved with the current leadership. | | |

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| Masisi Plaatjie (Lapologang Community Leadership) | 29 April 2022 | In the last community meeting with SLR, the community mentioned that they wanted to be relocated and resettled before the proposed project commenced. What is the update from Tharisa with regards to this issue? | Resettlement falls outside the scope of this environmental process. This question has however been recorded as part of this process for completeness purposes and will be provided to the Tharisa's SLP team for consideration. | N/A |
| Shepard Mampuru (Mmaditlhokwa Community Leadership) | 29 April 2022 | Will people be relocated near the west of the WRD as they seem to be affected? | | |
| Shepard Mampuru (Mmaditlhokwa Community Leadership) | 29 April 2022 | From my understanding a waste rock dump (WRD) should have a tailings facility in close proximity to it and this proposed WRD in the west does not have one close to it. As consultants, you should advise Tharisa. | Waste Rock material is unwanted material that is extracted from an open pit in order to allow for access to the underlying ore body. The waste rock is then stored on surface. Tailings material is generated as part of the processing plant and needs to be disposed of onto a tailings dam. It follows that these two types of waste form part of different waste streams and are not dependent on the other. | N/A |
| Godfrey Sedimerd (Mmaditlhokwa Community Leadership) | 29 April 2022 | Which road will be used to access the new development? | The existing internal mine haul roads will be used. No new haul roads will be established. | N/A |
| Mr Jali (Bokamoso Community Leadership) | 04 May 2022 | Are there still opportunities to add my comments on the project? | We are currently in the initial stages of the Proposed Project and as such comments can be submitted to SLR throughout the course of the environmental assessment process. | N/A |
| Federation for Sustainable Environment | | | | |
| Mariette Lieferrink | 25 April 2022 | Please provide information pertaining to the current groundwater and surface water quality. | Tharisa undertakes monitoring of groundwater and surface water resources in accordance with their | Sections 8.4.1.6 and 8.4.1.7 |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| | | | monitoring programme. Refer to Sections 8.4.1.6 and 8.4.1.7 for the groundwater and surface water monitoring data. | |
| Mariette Liefferink | 25 April 2022 | Has the stability of the proposed WRD's been considered? | Epoch has been appointed to prepare the detailed design for the proposed WRD's. As part of their work, a stability analysis will be undertaken. Further to this, the proposed WRD's design will need to meet the requirements of GN 632 of 2015 that regulates the planning and management of residue stockpiles and residue deposits from a prospecting, mining, exploration, or production operation. The detailed design reports will be provided as part of the EIA Phase. | Section 5.1.3.1 |
| Mariette Liefferink | 25 April 2022 | Will the proposed WRD's be lined? | In accordance with Regulation 3 of GNR 632 of the NEM:WA, waste rock stockpiles need to be characterised and classified using a risk-based approach to determine the appropriate management measures. In the absence of a prescribed method on how to undertake a risk-based analysis, the characterisation and assessment of waste rock material at Tharisa was determined in accordance with the following associated National Norms and Standards: <ul style="list-style-type: none"> • The National Norms and Standards for the assessment of waste for landfill disposal (GNR 635 of 2013); and • The National Norms and Standards for disposal of waste to landfill (GNR 636 of 2013). | Section 4.2.3.2 |

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| | | | <p>The waste classification and assessment in terms was undertaken by SLR in 2019 (SLR, 2019). The results from the assessment indicate that the waste rock is classified as a Type 3 waste in terms of the total concentration and a Type 4 waste in terms of the leachable concentrations. In terms of the risk-based waste assessment, it has been motivated that Class-D liner system is required for storage of the waste rock material, based on the following reasons:</p> <ul style="list-style-type: none"> • The leachable concentrations of all the constituents are below the threshold limit which indicates a lack of mobilised leachate and a low risk of seepage; • The placed waste rock material will be dry and not contain water; and • The waste rock material is not acid generating. | |
| Mariette Lieferink | 25 April 2022 | Will the proposed WRD's result in leachate and has there been consideration to acid mine drainage? | <p>With reference to Section 4.2.3.2, geochemical analysis was undertaken in 2019 by SLR. The results confirmed that there is no potential for acid mine drainage from the proposed waste rock dumps.</p> <p>In addition to this, the geochemical analysis also included a leachate assessment. The following CoCs were identified in the Tharisa mine WRD samples:</p> <ul style="list-style-type: none"> • Aluminium (Al) exceeded the SANS 241: Operational guidelines in all the samples; • Iron (Fe) exceeded the SANS 241: Aesthetic guidelines in samples MG-4A-OBW-1A.1B.1C, MG-4A-OBW-3A.3B.3C, MG-4A-OBW-4A.4B.4C, MG-3-IBW-6A.6B.6C, MG-2-IBW-7A.7B.7C, MG- | Section 4.2.3.2 |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| | | | <p>2-IBW-8A.8B.8C, while the rest of the samples exceeded the SANS 241: Chronic Health and IFC (2007) guidelines;</p> <ul style="list-style-type: none"> Lead (Pb) exceeded SANS 241: Chronic health and WHO (2017) guidelines in samples MG-4A-OBW-1A.1B.1C and MG-2-IBW-7A.7B.7C; The SANS 241: Operational and IFC mining effluent (2007) pH ranges (> 9) were exceeded in all samples except MG-4A-OBW-3A.3B.3C, MG-4A-OBW-5A.5B.5C and MG-1-IBW-10A.10B.10C which still fell within the top end of the tolerance range of > 8 pH; and The Total Suspended Solids (TSS) parameter exceeded IFC (2007) guidelines for all WR samples. <p>Updated geochemistry work will be undertaken as part of the Proposed Project and will be provided in the EIA and EMP.</p> | |
| Mariette Lieferink | 25 April 2022 | What is the volume of the proposed WRD's? | <p>The Proposed Project will have the following maximum storage capacity:</p> <ul style="list-style-type: none"> West OG WRD: Approximately 35.31 million m³ (Approximately 19.6 months of storage); and East OG WRD: Approximately 26.26 million m³ (approximately 14.6 months of storage). | Section 4.2.3 |
| Mariette Lieferink | 25 April 2022 | What consideration will be given to the fact that Tharisa is located in the Bojanala Priority Area? Will the project result in the need to update an Atmospheric Emissions Licence (AEL) for Tharisa? | This comment has been noted. As part of the Proposed Project an independent air quality specialist has been appointed for the Proposed Project. In this regard, the air quality specialist has | |

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| | | | <p>been requested to give consideration to the fact that Tharisa is located in the Bojanala Priority Area and how this will inform the Air Quality Study and the development of the management plan.</p> <p>The Tharisa operations does not require the need for an AEL. Further to this, the Proposed Project does not require an AEL.</p> | |
| Mariette Liefferink | 25 April 2022 | In the meeting, it was indicated that an Agricultural Study will be undertaken. Will the Proposed Project result in the loss of any agricultural land? | No, the Proposed Project will not result in the loss of any agricultural land. The reason for addressing this aspect as part of the Proposed Project is that the DFFE screening tool requires that this aspect is considered. | Section 10.1 |
| Mariette Liefferink | 25 April 2022 | Are the Proposed Project components located in any CBA's, NFEPA's and are any red data species likely to be influenced by the Proposed Project? | <p>With reference to Section 8.4.1.5 the following is noted:</p> <ul style="list-style-type: none"> The Proposed Project does not intersect with any NFEPA watercourses. With reference to Figure 14, the proposed West OG WRD is located in Ecological Support Areas 1 and 2. Ecological Support Areas are terrestrial and aquatic areas that are not essential for meeting biodiversity representation targets, but which nevertheless play an important role in supporting the ecological functioning of critical biodiversity area delivering ecosystem services. The protected Marula Tree is known to occur at the Tharisa Mine, and as follows could be disturbed if located within the footprints of | Section 8.4.1.5 |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated | | | | | | |
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| | | | West OG WRD. This will be confirmed through site work. | | | | | | | |
| Other I&APs, parastatals | | | | | | | | | | |
| Natalie Koneight (Rand Water). | 01/12/2021 | Can you please provide Rand Water with the shape files (kmz files), Locality map and Application in order to determine if Rand Water will be affected? | This information was provided via email. We are waiting for a response to confirm if the Proposed Project is likely to affect any Rand Water infrastructure. | N/A | | | | | | |
| Engela Janse van Rensburg. | 01/12/2021 | On which portions of 342JQ will the waste rock and tailings dam be constructed? | <p>In terms of the Proposed Project, there have been numerous changes to the project description since the start of the project. In this regard, the Proposed Project includes the following components:</p> <ul style="list-style-type: none">• The expansion of the existing and approved Far West WRD 1. The expanded area will be referred to as the West OG)WRD. Portions of the West OG WRD will be located on backfilled areas of the West Pit; and• The establishment of a waste rock dump (referred to as the East OG WRD) on backfilled portions of the East Pit. <p>Please note that the tailings dam no longer forms part of this environmental authorisation process. The farm portions on which the Proposed Project is located is tabulated below. I have also attached a map for your perusal.</p> <table><tr><th>Relevant project component</th><th>Relevant farm name</th><th>Relevant farm number</th></tr><tr><td></td><td></td><td></td></tr></table> | Relevant project component | Relevant farm name | Relevant farm number | | | | |
| Relevant project component | Relevant farm name | Relevant farm number | | | | | | | | |
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| Interested and affected party | Date comment received | Issues raised | Response provided | | | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| | | | West OG WRD | 342 JQ | Portions 12, 150, 109, 11, 358, 357, 190, 29, 30, 105, 118, 13, 117, 48, 47, 41, 334, 335, 336 19, 266, 318, 213, 212, 262, 259, 26, 28, 27, 25, 74, 16, 214, 15 and 206 | |
| | | | East OG WRD | 342 JQ | 152, 138, 96, 183, 218, 219, 220, 184, 186 and 251 | |
| Frik du Preez (Glencore). | 02/12/2021 | <p>Unfortunately this notice does not impress or provide any reconciliation for us as already interested and effected parties, since it is apparent that the previous impact studies done for Tharisa was insufficient, incomplete and without consideration for the actual impact on the surrounding communities.</p> <p>We have engaged independent Environmental and Medical specialists in light of recent deaths and illnesses occurring within the surrounding community, which you might be completely unaware off, yet we aim to analyse the true and relevant influence of the mining activities on the human beings in the doorstep community, since the agricultural, farming and property damage impacts have been blatantly ignored and complaints completely disregarded to this point.</p> | As part of the proposed project, numerous specialist studies have been identified to understand the impact associated with the proposed project. In this regard, the specialists will take cognisance of the current state of the environment and determine how the proposed project will influence the existing state. Section 9.4 of this Scoping Report outlines the planned specialists studies for the proposed project. | | | Section 9.4 |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
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| | | <p>Mining and its processing activities inevitably comes with the contamination of surrounding environments with the associated metals through atmospheric deposition, waste-water discharge, and surface runoff. Platinum and Chrome metals and elements more specifically in this case, has long been recognized as toxic, mutagenic and carcinogenic to microorganism, plants, animals and humans. These toxic substances released into the environment could pose a risk and health problems to populations in their vicinity therefore we sought to investigate whether there might be excess cancer and other illness-related mortality in our populations residing in the direct vicinity of Tharisa mine. Following the availability and release of our environmental and toxicology reports and action or inaction from the DMRE, the law will determine the future course with the various active diagnoses we have in the immediate community.</p> | <p>As part of the proposed project, numerous specialist studies have been identified to understand the impact associated with the proposed project. In this regard, the specialists will take cognisance of the current state of the environment and determine how the proposed project will influence the existing state. Section 9.4 of this Scoping Report outlines the planned specialists studies for the proposed project.</p> | |
| <p>Richard Spoor (Richard Spoor Inc. Attorneys). Was not on the database - added.</p> | 02/12/2021 | <p>Please register us as an interested an affected party. We represent a number of property owners within the Tharisa Mining Rights Area. They are:</p> <ol style="list-style-type: none"> 1. Portion 110 – Mr PHC Wolvaardt and Mrs HM Wolvaardt 2. Portion 139 – Mr GJC Pretorius and Mrs SC Pretorius 3. Portion 196 – Ms N van der Hoven 4. Portion 305 – Mr GJC du Preez and Mrs MD du Preez | <p>Members of Richard Spoor Inc. have been included on the project database. Your objection to the project has also been noted. As part of this environmental authorisation process, numerous specialist investigations have been identified to inform the understanding of how the proposed project will influence the current biophysical, cultural and socio-economic environment. The terms of reference for the specialist studies is outlined in Section 9.4 for your consideration.</p> | Section 9.4 |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
|-------------------------------|-----------------------|---|--|--|
| | | <p>Attached find a copy of a notice issued in terms of Section 54 of the MPRDA and served on the regional manager of the DMRE on 17 November 2021, that sets out the current circumstances faced by our clients.</p> <p>The content of the notice issued to the DMRE in terms of Section 54 of the MPRDA is as follows:</p> <ul style="list-style-type: none"> • We act for the persons listed in the Schedule, who are the owners or lawful occupiers of the properties appearing next to their names. • All the properties fall within the mining rights area of Tharisa Minerals (South Africa) Limited, who own and operate the Tharisa Platinum Mine, near Marikana. • Our clients have suffered and continue to suffer significant hardship, loss and damage as a result of Tharisa's mining operations. • Mining operations, including the dumping of waste rock and blasting are taking place within a few hundred meters of our clients' properties, in some instances, waste rock is being dumped on their property boundaries. • The mining activities have caused structural cracking of dwelling houses and cracked and broken windows. They are literally falling apart. Persons living on the properties are exposed to noise and severe dust daily, to the extent that their health is being seriously affected thereby. | <p>Members of Richard Spoor Inc. have been included on the project database. Your objection to the project has also been noted. As part of this environmental authorisation process, numerous specialist investigations have been identified to inform the understanding of how the proposed project will influence the current biophysical, cultural and socio-economic environment. The terms of reference for the specialist studies is outlined in Section 9.4 for your consideration.</p> | <p>Section 9.4</p> |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
|-------------------------------|-----------------------|---|--|--|
| | | <p>The smell of blasting fumes hangs thick in the air.</p> <ul style="list-style-type: none"> • It has become almost impossible to live on the properties and conditions are quite intolerable. • We have no doubt that the mining activities in such close proximity to our clients' properties and the associated nuisance and danger they cause are unlawful. • As a result of the mine's activities our clients' boreholes have dried up and the value of our clients' properties has collapsed, the properties are unsaleable in the open market. • It has also become impossible for our clients to carry on farming activities, which many of them did before Tharisa started mining in the area. • We have been engaged with Tharisa for over a year regarding this situation. While Tharisa has indicated that it is willing to purchase our clients' properties, we have been unable to agree on a price. • Our view is that the properties should be purchased by Tharisa at replacement value and that the owners also be compensated for the financial loss and harm that they have suffered as a result of Tharisa's mining activities. • In this regards we point out that Tharisa subscribes to the Equator Principles and is therefore bound to comply with the International Financial Corporation's Performance Standards on Social and | <p>Members of Richard Spoor Inc. have been included on the project database. Your objection to the project has also been noted. As part of this environmental authorisation process, numerous specialist investigations have been identified to inform the understanding of how the proposed project will influence the current biophysical, cultural and socio-economic environment. The terms of reference for the specialist studies is outlined in Section 9.4 for your consideration.</p> | |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
|-------------------------------|-----------------------|--|--|--|
| | | <p>Environmental Sustainability, which stipulate that where people or communities are displaced by mining activities that they should be compensated for the loss of their properties on a replacement value basis.</p> <ul style="list-style-type: none"> On its part Tharisa refuses to comply with its own commitments and has indicated that it will only pay market value for the properties. This does not come close to replacement value. Tharisa is also not willing to pay compensation for loss and harm. We have proposed referring the matter to arbitration but Tharisa and their attorney have been unresponsive. Tharisa is unmoved by the intolerable circumstances on the ground. As it appears to us, the mine wishes to make our clients lives completely intolerable so as to compel them to agree to the mine's unfair terms. This is completely unacceptable, and as a result we require your urgent intervention. <p>In the circumstances we call upon you (DMRE) to:</p> <ol style="list-style-type: none"> To send an official, on an urgent basis, to inspect the properties and assess and to report on the hazard posed to the lawful occupiers and to their property by Tharisa's continuing mining operations. Subject to what you find, to prohibit Tharisa from continuing with mining operations, including dumping of waste rock within 500m of our client's properties, | <p>Members of Richard Spoor Inc. have been included on the project database. Your objection to the project has also been noted. As part of this environmental authorisation process, numerous specialist investigations have been identified to inform the understanding of how the proposed project will influence the current biophysical, cultural and socio-economic environment. The terms of reference for the specialist studies is outlined in Section 9.4 for your consideration.</p> | |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
|-------------------------------|-----------------------|---|--|--|
| | | <p>until such time as the dispute has been resolved by arbitration or by a competent court.</p> <p>3. To require Tharisa to make representations regarding the issues raised in this letter.</p> <p>4. Having considered Tharisa's representations, to direct that the issue of compensation be referred to arbitration for determination in accordance with the Arbitration Act or by a competent court.</p> <p>We will oppose the grant of any further environmental authorisations to Tharisa until such time as the company addresses our clients' concerns.</p> | <p>Members of Richard Spoor Inc. have been included on the project database. Your objection to the project has also been noted. As part of this environmental authorisation process, numerous specialist investigations have been identified to inform the understanding of how the proposed project will influence the current biophysical, cultural and socio-economic environment. The terms of reference for the specialist studies is outlined in Section 9.4 for your consideration.</p> | |
| Mbengeni Tshidzumba (Eskom). | 20/04/2022 | <p>We refer to your email dated 11/04/2022.</p> <p>This application affects our Eskom North West Operating Unit, MIDDELKRAAL / THARISA 1 88kV, THARISA / SPRUITFONTEIN 1 88kV, THARISA / SERAMER 1 11kV, THARISA / RAMOSER 1 11kV and THARISA / MAMALEKA 1 11kV Conductors. Eskom Distribution will raise no objection to the proposed application, provided Eskom's rights and services are acknowledged and always respected.</p> <p>1. There is 9 metres building and tree restriction on either side of the centre line of the 11 kV power lines, which must be adhered to in all future developments. No construction work may be executed closer than 9 meters from any of Eskom's structures and or supporting mechanisms. The building restriction for 132 kV on each side of the</p> | <p>With reference to the information available (shapefiles and google imagery) to date, it is not anticipated that the proposed project will impact on any Eskom infrastructure. However, SLR Consulting is awaiting shapefiles from Eskom to confirm that the proposed WRD's fall outside the Eskom infrastructure buffers.</p> <p>This will be assessed and confirmed as part of the EIA and EMP phase.</p> | Section 8.4.3.3 |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
|-------------------------------|-----------------------|---|---|--|
| | | <p>center of the power line is 15.5m and the separation distance between parallel lines is 21m.</p> <p>2. All work within Eskom Distribution reserve area and servitudes must be done in accordance with the requirements of the Occupational Health and Safety Act No.85 of 1993 as amended. Special attention must be given to the clearances between Eskom's conductors, structures, cables and electrical apparatus and the proposed work as stipulated by Regulation R15 of the Electrical Installations Regulations of the aforementioned Act or any other legal requirements. The requirements of the OHS Act must be adhered to in conditions where the existing.</p> <p>3. Eskom Distribution's services and equipment must be always acknowledged and may not be tampered or interfered with.</p> <p>4. All work within Eskom Distribution reserve area and servitudes must be done in accordance with the requirements of the Occupational Health and Safety Act No.85 of 1993 as amended. Special attention must be given to the clearances between Eskom's conductors, structures, cables and electrical apparatus and the proposed work as stipulated by Regulation R15 of the Electrical Installations Regulations of the aforementioned Act or any other legal requirement.</p> | <p>With reference to the information available (shapefiles and google imagery) to date, it is not anticipated that the proposed project will impact on any Eskom infrastructure. However, SLR Consulting is awaiting shapefiles from Eskom to confirm that the proposed WRD's fall outside the Eskom infrastructure buffers.</p> <p>This will be assessed and confirmed as part of the EIA and EMP phase.</p> | |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
|-------------------------------|-----------------------|--|---|--|
| | | <p>5. The Applicants and Eskom's cables must be placed in sleeves encased in concrete across the width of the servitude, at the applicant's expense where frequent excavations occur in the cable area.</p> <p>6. Eskom Distribution shall not be liable for the death of or injury to any person or for the loss of or damage to any property whether as a result of the encroachment or of the use of the area where Eskom Distribution has its services, by the applicant, his/her agent, contractors, Employees, successors in title and assigns.</p> <p>7. The applicant indemnifies Eskom against loss, claims or damages including claims pertaining to interference with Eskom Distribution services or apparatus or otherwise. The applicant's attention is drawn to section 27(3) of the Electricity Act 1987, as amended in 1994, which stipulates that the applicant can be fined and/or imprisoned as a result of damage to Eskom's apparatus.</p> <p>8. No mechanical equipment, including mechanical excavators, high lifting machinery and drilling equipment, may be used within Eskom's reserve area, or within close proximity of Eskom's services and equipment, without prior permission in writing and supervision of Eskom's authorised area manager for the NWOU Technical Service Centre Area; T Sewisa - SewisaTM@eskom.co.za> (Tel. 0724269569).</p> | <p>With reference to the information available (shapefiles and google imagery) to date, it is not anticipated that the proposed project will impact on any Eskom infrastructure. However, SLR Consulting is awaiting shapefiles from Eskom to confirm that the proposed WRD's fall outside the Eskom infrastructure buffers.</p> <p>This will be assessed and confirmed as part of the EIA and EMP phase.</p> | |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
|-------------------------------|-----------------------|--|---|--|
| | | <p>9. Permission must be obtained at least 10 (ten) working days prior to the commencement of any work within the reserve area.</p> <p>10. Eskom Distribution shall at all times have unobstructed access to and egress from its services.</p> <p>11. It will be required of the applicant to familiarise him/her self with all safety hazards related to electrical plant.</p> <p>12. Eskom's consent will not relieve the applicant from obtaining the necessary statutory, land owner or municipal approvals. (Eskom is not the land owner).</p> <p>13. Any third-party servitudes encroaching on Eskom servitudes shall have to be registered against the property at the applicant's own cost.</p> <p>14. The ineffective management and handling of waste is of crucial importance. No dumping shall be allowed within Eskom Distribution Servitudes. All unwanted waste (gaseous, liquid or solids) should be disposed of at a registered waste disposal site as stipulated under Section 20 of the Environmental Conservation Act (Act 73 of 1989).</p> <p>15. No blasting is permitted. If blasting is needed, an additional application is to be lodged with Eskom Distribution.</p> <p>16. Any development, which necessitates the relocation of our services, will be to the account of the developer. For the relocation of any services, please contact Eskom Customer Services at Eskom Contact Centre: 086 00 37566.</p> <p>17. Eskom will recover costs from the applicant where any damages of Eskom assets and or any penalties</p> | <p>With reference to the information available (shapefiles and google imagery) to date, it is not anticipated that the proposed project will impact on any Eskom infrastructure. However, SLR Consulting is awaiting shapefiles from Eskom to confirm that the proposed WRD's fall outside the Eskom infrastructure buffers.</p> <p>This will be assessed and confirmed as part of the EIA and EMP phase.</p> | |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
|---|-----------------------|--|--|--|
| | | suffered by Eskom occur. Should the applicant or his contractor damage any of Eskom services during commencement of any work whatsoever, then Eskom's 24-hour Contact Centre Tel: 086 000 1414 must be notified immediately to report the incident. We thank you and hope you will find the above in order. Should you have technical queries on the Eskom standards and specifications please feel free to phone our Technology and Quality Department, contact person: Mr Stephen Nkwane Tel: 012 421 4853 | With reference to the information available (shapefiles and google imagery) to date, it is not anticipated that the proposed project will impact on any Eskom infrastructure. However, SLR Consulting is awaiting shapefiles from Eskom to confirm that the proposed WRD's fall outside the Eskom infrastructure buffers. This will be assessed and confirmed as part of the EIA and EMP phase. | |
| S Chabalala (Bokamoso mooinooi business Chamber). | 21/04/2022 | Herein Bokamoso Mooinooi business Chamber (BMBC) represented by its executive members. BMBC is the registered company that has been registered to serve ward 27 at large that consists of Mooinooi and Mamba (Bokamoso). We are here by interested in tendering for this project for the benefit of the community. We will be sending through our quote for consideration as we know that the rehabilitation projects belongs to the local communities. | SLR has been appointed as an independent environmental practitioner to undertake an environmental authorisation process for the proposed project. In this regard, SLR is not involved with tendering processes at Tharisa and as such this would need to be handled directly with Tharisa. Your comment have however been noted and has been forwarded to Tharisa. What is important to note is that the Proposed WRD project has not been approved. It follows that the Proposed Project can only commence when all necessary approvals have been obtained. | N/A |
| S Chabalala (Bokamoso mooinooi business Chamber) | 28/04/2022 | Note that we have been trying to get hold of you telephonically with regards to the rehabilitation project from Tharisa. We did go through the 3 attachments but there is no quantities and distances on the documents shared with us of which it doesn't give us clear understanding on the pricing. | This environmental authorisation process only deals with the establishment of the WRD's at the Tharisa Mine. The Closure and Rehabilitation Project is being handled as part of a separate process by a different environmental consulting company. | N/A |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
|-------------------------------|-----------------------|---|--|--|
| | | We as BMBC would like to be given clarity on the above raised concerns on this tender so that we can price it correctly as concerned. We also request an extension for two days so that we can have enough time to work on pricing. | | |
| Collen Dimo | 11 April 2022 | I don't understand this SMS what's that mean. The revised Background Information Document (BID) for the Additional Waste Rock Storage at the Tharisa Mine is available for review. A copy of the BID is available electronically on the SLR website (https://slrconsulting.com/public-documents). For queries contact Reinett Mogotshi from SLR (0114670945, rmogotshi@slrconsulting.com). | <p>Tharisa is an opencast mining operation that produces chrome and platinum group metals (PGM) concentrate. The opencast mine is located on the farms 342 JQ and Elandsdrift 467 JQ near the town of Marikana in the Bojanala District Municipality and Rustenburg Local Municipality, North West Province. Tharisa holds existing environmental authorisations and licenses.</p> <p>As part of its on-going mine planning Tharisa has identified the need for additional waste rock storage on site. In this regard, Tharisa is proposing to:</p> <ul style="list-style-type: none"> • Extend a previously approved WRD; and • Establish WRDs above backfilled portions of the East and West pits. <p>As a resident of the neighbouring community, you were identified as an interested and affected party for the Proposed Project at Tharisa and have received a notification on the availability of the BID for review.</p> | N/A |
| Dorris Makgaka | 25 April 2022 | How was the bid made available? And to who was it given, if it's in black and white? | The BID was made available electronically for review. A copy of the BID can be accessed from the SLR website (https://www.slrconsulting.com/en/public-documents/tharisa) or on SLR's data-free website | Section 8.2 Appendix C |

| Interested and affected party | Date comment received | Issues raised | Response provided | Section and paragraph reference in this report where the issues and or responses were incorporated |
|-------------------------------|-----------------------|---------------|---|--|
| | | | <p>(at https://slrpublicdocs.datafree.co/public-documents/tharisa).</p> <p>All registered stakeholders received either an SMS/ Email to notify them of the availability of the BID for review and a link to where this document can be accessed.</p> | |

8.4 ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE SITE

The baseline information is aimed at providing the reader with a perspective of the existing status of the biophysical, cultural and socio-economic environment. Baseline information for this Scoping Report draws extensively on information contained in reports from previous studies conducted at the Tharisa Mine. More detailed information will be provided in the EIA report, once the specialist studies commissioned for this project have been concluded.

The EIA Regulations, 2014 (as amended) requires that the section below describes the baseline environment for all project related alternatives where applicable. Given that the Proposed Project is not associated with any alternatives, this is not applicable to the section below.

The section below draws on information sourced from the approved EMP_r (SLR, 2014) as well as from the review of available literature. It follows that during the EIA and EMP_r phase of the project, the baseline information provided in the section below will be more detailed and refined with specialist input.

8.4.1 BASELINE BIOPHYSICAL ENVIRONMENT AFFECTED BY THE PROPOSED PROJECT

8.4.1.1 Geology

The geology of an area provides information on the presence of mineral resources (and informs the mine plan), the geochemistry and related potential for contamination from mined material and the presence of geological structures (such as faults and dykes) that act as barriers or conduits (preferential flow paths) for groundwater flow. Geological processes also influence soils forms (Section 8.4.1.4), the type and nature of groundwater aquifers (Section 8.4.1.7) and the potential for palaeontological resources (8.4.2.1).

Geological information was sourced from the approved EMP_r (SLR, 2014), update geochemistry prepared for the mine (SLR, 2019) and the updated resource estimate for the mine.

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 6. 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.

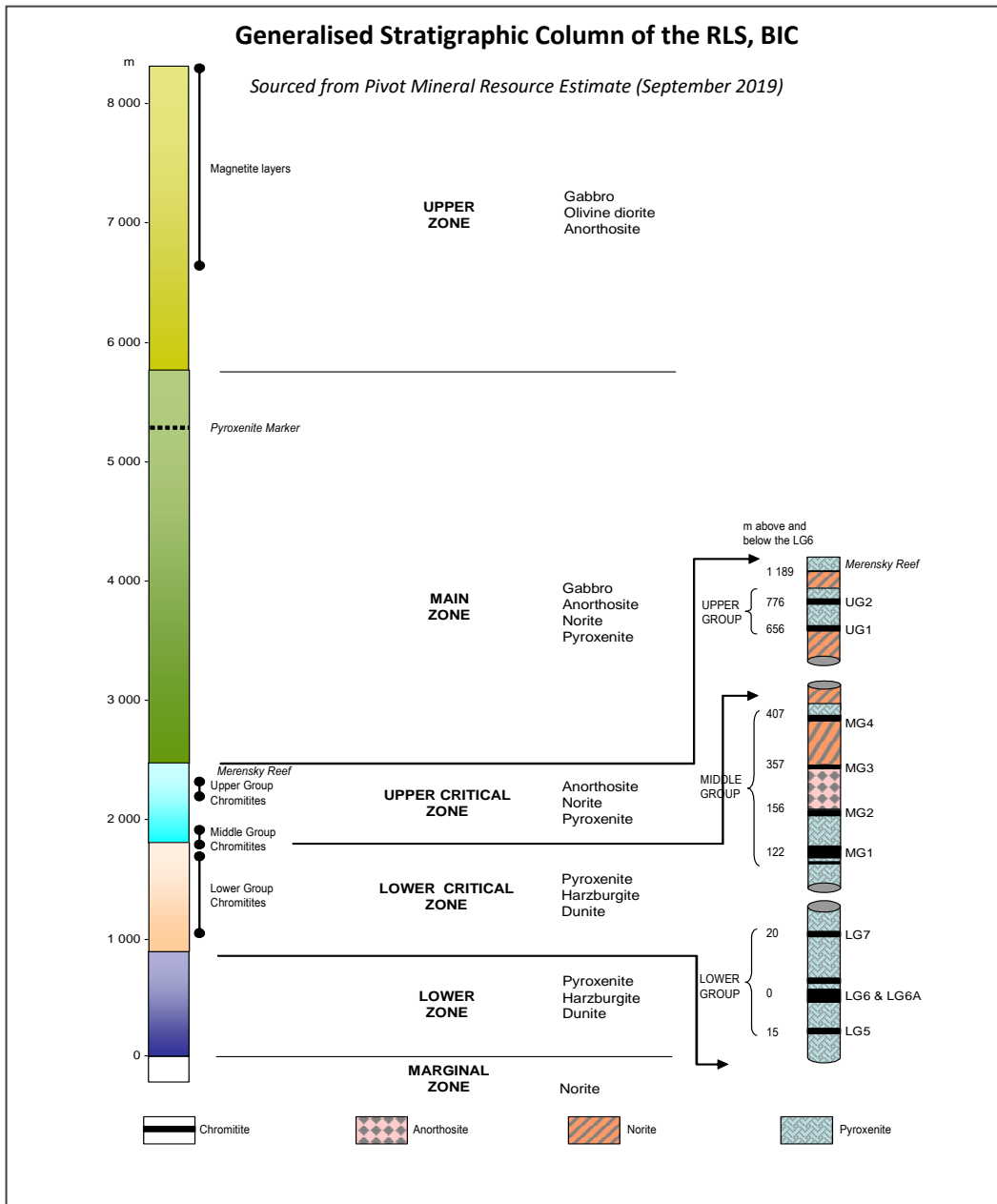


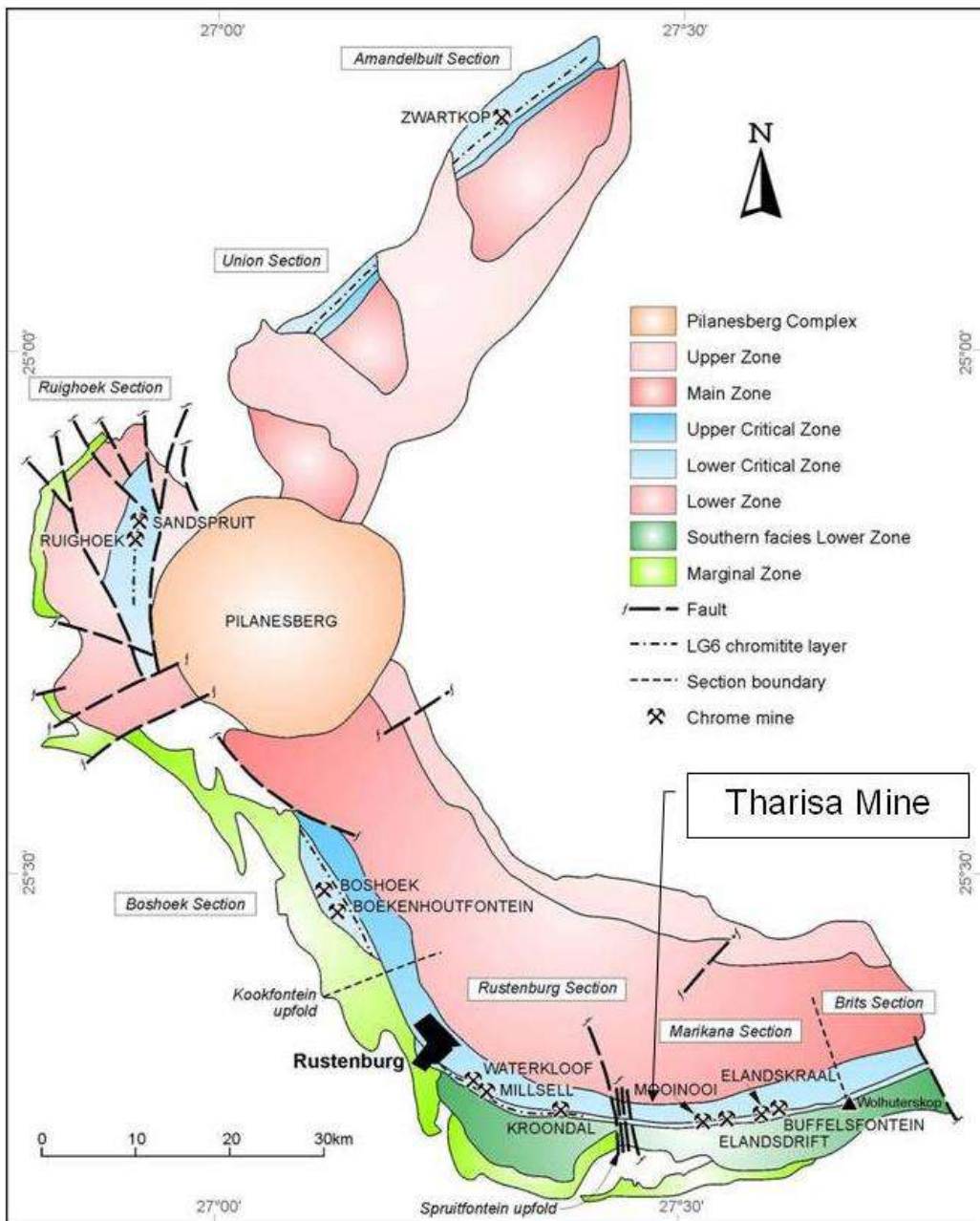
FIGURE 6: STRATIGRAPHY OF THE REGIONAL GEOLOGY

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 Wolhuterskop fault and the Rustenburg section to the west by the Spruitfontein upfold (see Figure 7). 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 25 m to the west near the Spruitfontein upfold.

The MG package has four main groups of chromitite layers hosted in anorthosite, norite and feldspathic pyroxenite (refer to Figure 7). 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 feldspathic 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 7).



Sourced from Pivot Mineral Resource Estimate (September 2019)

FIGURE 7: MAP OF THE WESTERN BIC SHOWING THE LOCATION OF THE THARISA MINE

Lithologies of Waste Rock Material

The waste rock associated with the PGM at the Tharisa Mine generally comprises lithologies of the RLS as follows (SLR, 2019):

- Pyroxenite
 - Ultramafic rock with less than 45 % total silica;
 - Composed almost entirely of one or more pyroxenes (inosilicate mineral); and
 - Other minerals may include biotite, hornblende, olivine and iron oxides.
- Anorthosite

- Basic rock with less than 55 % total silica;
- Quartz virtually absent;
- Composed at least 90 % plagioclase feldspar; and
- Other minerals may include olivine, pyroxene and iron oxides.
- Norite
 - Basic rock with less than 55 % total silica;
 - Composed of plagioclase feldspar and pyroxene;
 - Orthopyroxene is dominant over clinopyroxene; and
 - Other minerals may include olivine, biotite, hornblende and cordierite.

Structural Features

As mentioned previously, the Wolhuterskop 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.

8.4.1.2 Topography

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.

Information in this section was sourced from the approved EMPr (SLR, 2014) and topographical data.

Immediate and surrounding topographical environment

In general, the area surrounding the 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 1). 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 2):

- 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 D1325 (Marikana Road); and
- The N4 located immediate south of the Tharisa Mine together with farming related activities.

The Proposed Project area associated with East OG WRD and West OG WRD, has been altered due to the existing open cast mining related activities associated with the West and East mine. The natural topography associated with West OG WRD has been disturbed and altered as a result of the existing mining activities associated with West Mine and community related activities (particularly Maditlhokwa).

8.4.1.3 Climatic conditions

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.

Climate data was sourced from the approved EMPr (SLR, 2014) and updated with more recent data from the South African Weather Service (SAWS). 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 (refer to Figure 1) and is the closest station to the mine. Wind data was sourced from the Air Quality impact Assessment (AQIA) commissioned by Green Gold Group (Pty) Ltd (Green Gold, 2019).

Regional Climate

The 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).

Rainfall, Evaporation and Rainfall Depths

Average monthly rainfall and evaporation data for the Buffelspoort weather station is provided in Figure 8. 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 (see Figure 9). The probable maximum precipitation at the Tharisa mine is estimated to be approximately 62 mm for a 24-hour rainfall duration.

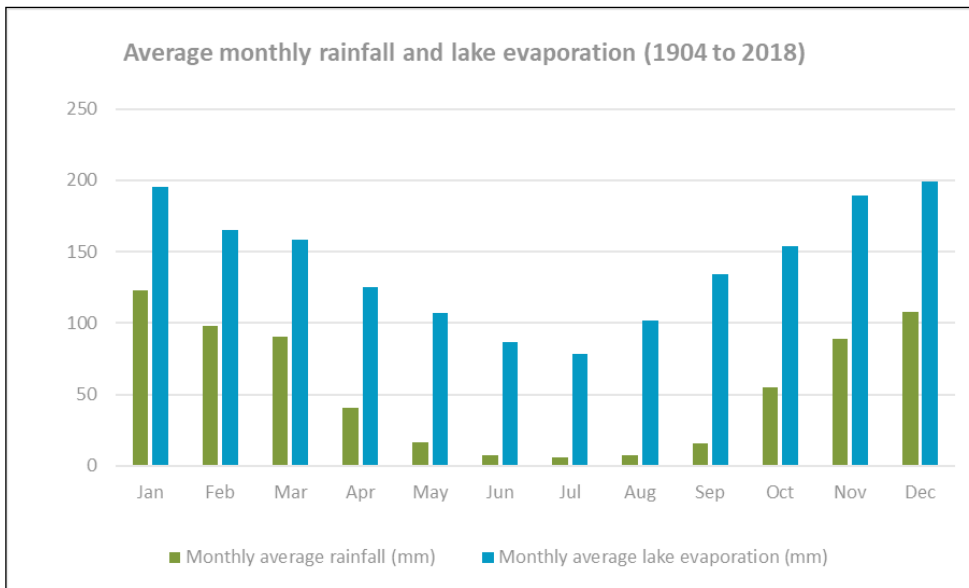


FIGURE 8: AVERAGE MONTHLY RAINFALL

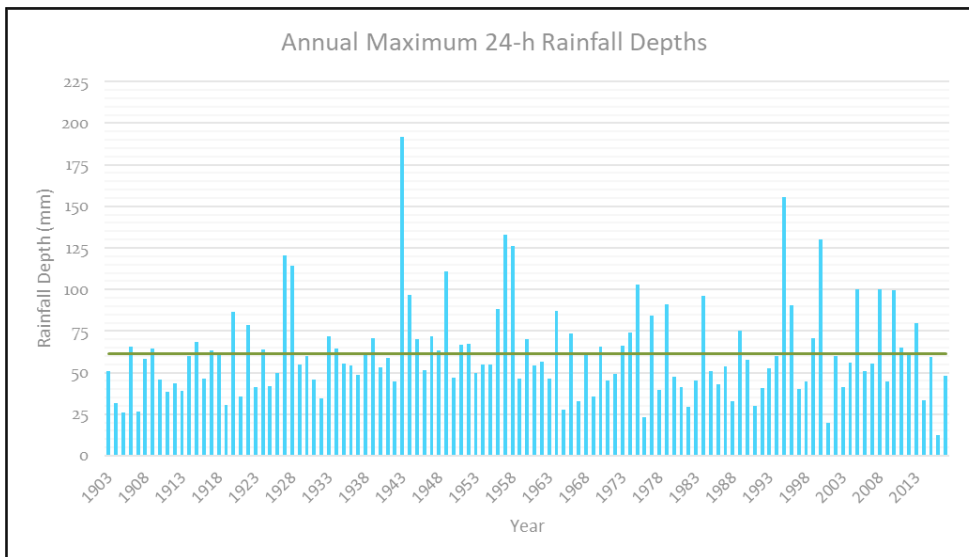


FIGURE 9: DAILY ANNUAL MAXIMUM RAINFALL DEPTHS FOR ANALYSED RAINFALL

Temperature

The average monthly maximum and minimum temperature values for the Buffelspoort Weather station are shown in Figure 9. From the table it can be seen that the area experiences an average maximum temperature of 26.2°C and an average minimum temperature of 11.1°C.

FIGURE 9: MINIMUM, AVERAGE AND MAXIMUM TEMPERATURES RECORDED AT THE BUFFELSPOORT WEATHER STATION

| | Jan | Feb | March | April | May | June | July | Aug | Sep | 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 10 (Green Gold, 2019). 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 (see Figure 11) (Green Gold, 2019). 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.

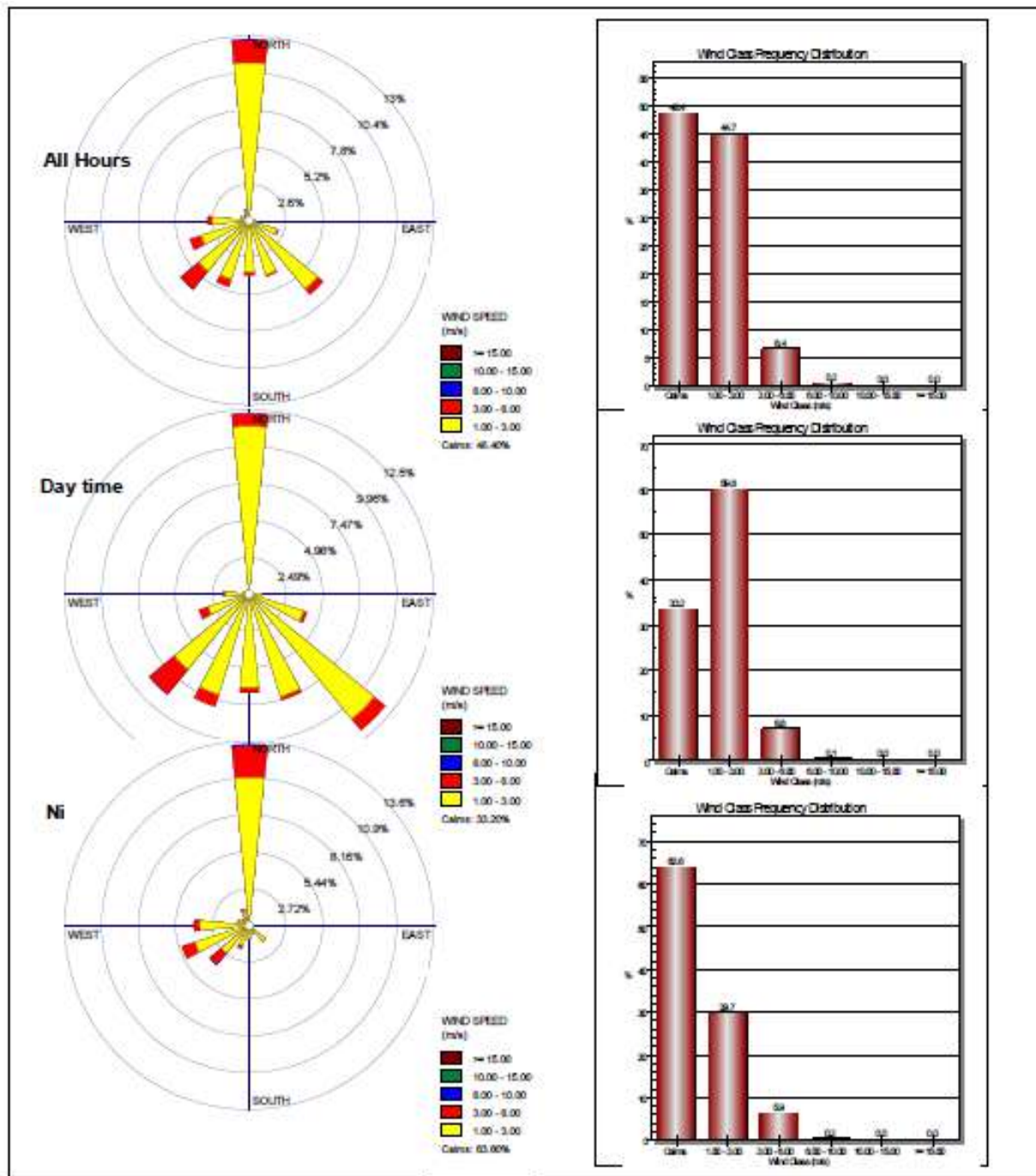


FIGURE 10: WIND ROSES AND WIND SPEED FREQUENCY DISTRIBUTION: ALL HOURS, DAY TIME AND NIGHT-TIME

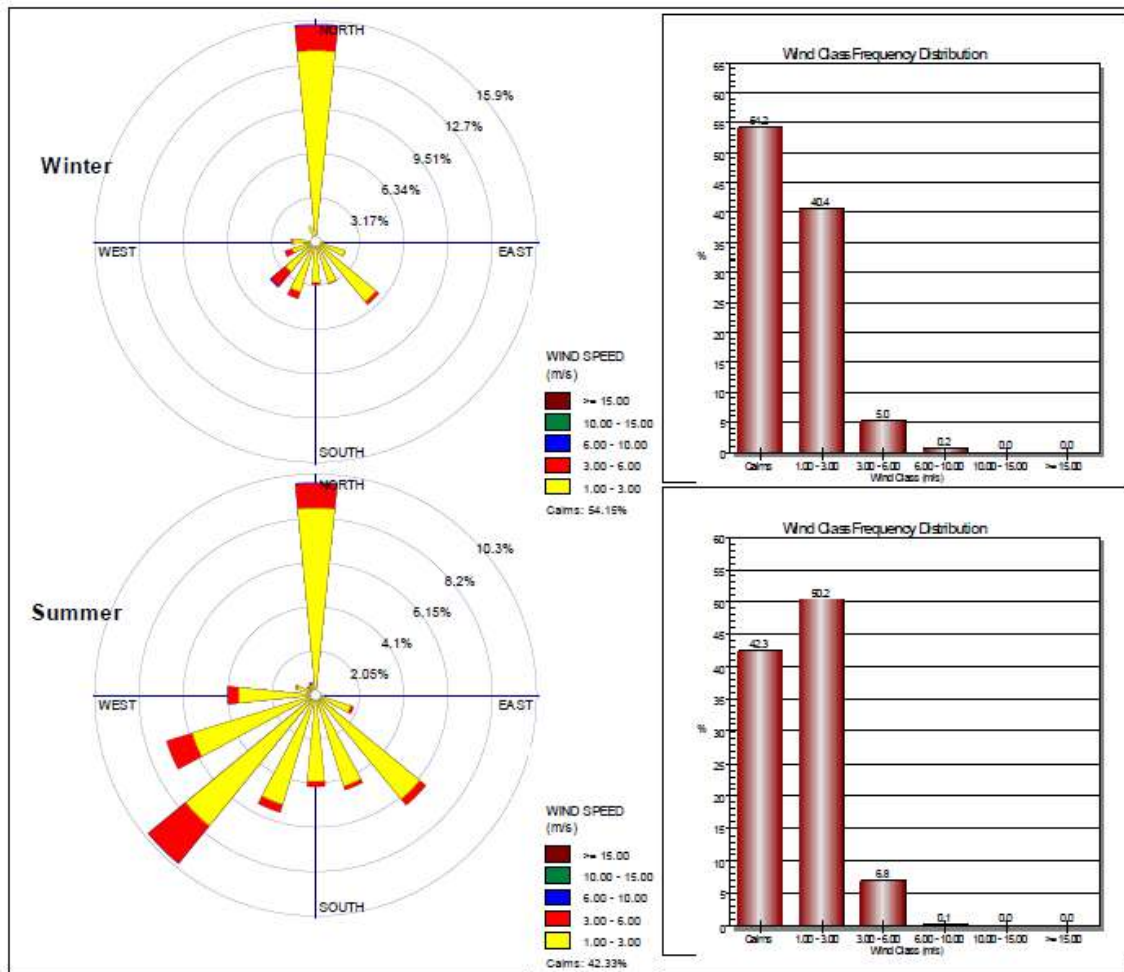


FIGURE 11: WIND ROSES AND WIND SPEED FREQUENCY DISTRIBUTION: WINTER AND SUMMER

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).

8.4.1.4 Soils and land capability

Soils are a significant component of most ecosystems. As an ecological driver, soil is the medium in which most vegetation grows and a range of vertebrates and invertebrates exist. In the context of mining operations, soil is even more significant as mining is a temporary land use where after rehabilitation, soil availability is the key factor to the establishment of post closure land capability and use.

Mining activities and infrastructure have the potential to damage soil resources through physical loss of soil and/or the contamination of soils, thereby impacting on the soils' ability to sustain natural vegetation and altering land capability. Contamination of soils may in turn contribute to the contamination of surface and groundwater resources. Loss of the topsoil resource reduces chances of successful rehabilitation and restoration.

Information in this section was sourced from the approved EMPr (SLR, 2014), through the review of available literature, as well as studies undertaken near the Tharisa Mine.

Soil Forms

The pre-mining soils within Tharisa Mine include those of the orthic phase (Hutton), structured forms (Mayo, Shortlands, Sterkspruit, Swartland and Valsrivier) and hydromorphic forms (Bonheim). The heavy structured black and dark brown clay soils (Sterkspruit, Mayo and Swartland soil forms) are commonly referred to as "black-turf". Structured soils cover the majority of the mine footprint. These soil forms are characterised as follows:

- **The Hutton soil form:** This soil form is an oxidic soil and is characterized by a thick Orthic/Red Apedal horizon and has strong pigmenting effects of iron (Fe) in the form of hematite and goethite. These soils are generally considered freely drained and well aerated. These attributes make these soils ideal for tillage;
- **The Shortlands and Valsrivier soil forms:** These soil forms are generally found associated with the Hutton form and have similar chemistry. These soils have moderately low intake rates, high water holding capabilities and in certain cases, showed evidence of expansive clays (predominantly smectite);
- **The Mispha, Mayo and Milkwood soil forms:** These soils are characterised by effective rooting depths but have major associated constraints being tillage, sub surface hindrance and erosion. They have moderate to high clay percentages (20% to 45%) and have low internal drainage and water holding capacities;
- **The Sterkspruit and Swartland soil forms:** These soils are generally blocky to prismatic in structure, have low intake rates, moderate water holding capabilities and show evidence of expansive clays;
- **The Sepane soil form:** This soil form is hydromorphic and is influence by a rising and falling water table. Generally, these soils are high in transported clay in the lower "B" horizon with highly leached topsoils and pale denuded horizon at shallow depths;
- **The Bonheim soil form:** These soils are found associated with more basic derived lithologies that occur in the area. They are highly sensitive to compaction and erosion, mainly due to their often-hydromorphic nature and exceptionally strong structure. These soils are prone to the formation of hard "clods" when they dry out;
- **The Arcadia soil form:** Arcadia soils are characterised by high clay contents, often of a swelling variety that saturate easily, drain slowly, and crack when dried out. The vertic structure is the distinctive feature of these soils, the Arcadia by definition being a vertic horizon on a soft rock base; and

- Existing infrastructure and activities, private farming activities and community related activities at the Tharisa Mine have influenced the natural capability of the land.

The Proposed Project area associated with East OG WRD will be established over backfilled portions of the East pit. The natural soil forms associated with West OG WRD has been disturbed and altered as a result of the existing mining activities associated with West Mine.

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 Mine area have moderate erodibility. These soils are not that prone to erosion, but compaction and contamination of these soils require assessment and mitigation.

Dry Land Agricultural and Irrigation Potential

Due to the general low levels of potassium, zinc and phosphorous 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 fertilizers 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.

8.4.1.5 Biodiversity

In the broadest sense, biodiversity provides value for ecosystem functionality, aesthetic, spiritual, cultural, and recreational reasons. The known value of biodiversity and ecosystems relate to soil formation and fertility maintenance; primary production through photosynthesis; provision of food and fuel; provision of shelter and building materials; regulation of water flows and water quality; regulation and purification of atmospheric gases; moderation of climate and weather; control of pests and diseases; and maintenance of genetic resources.

As a baseline, this section provides an outline of vegetation types occurring within and surrounding the Tharisa Mine, as well as within the Proposed Project areas. 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.

Information in this section was sourced from the approved EMPr (SLR, 2014) and through the review of available literature. Desktop vegetation type information and the associated conservational status were extracted from the South African National Vegetation Map. Numerous national and provincial databases were utilised to determine the conservational sensitivity of the project areas. These databases included:

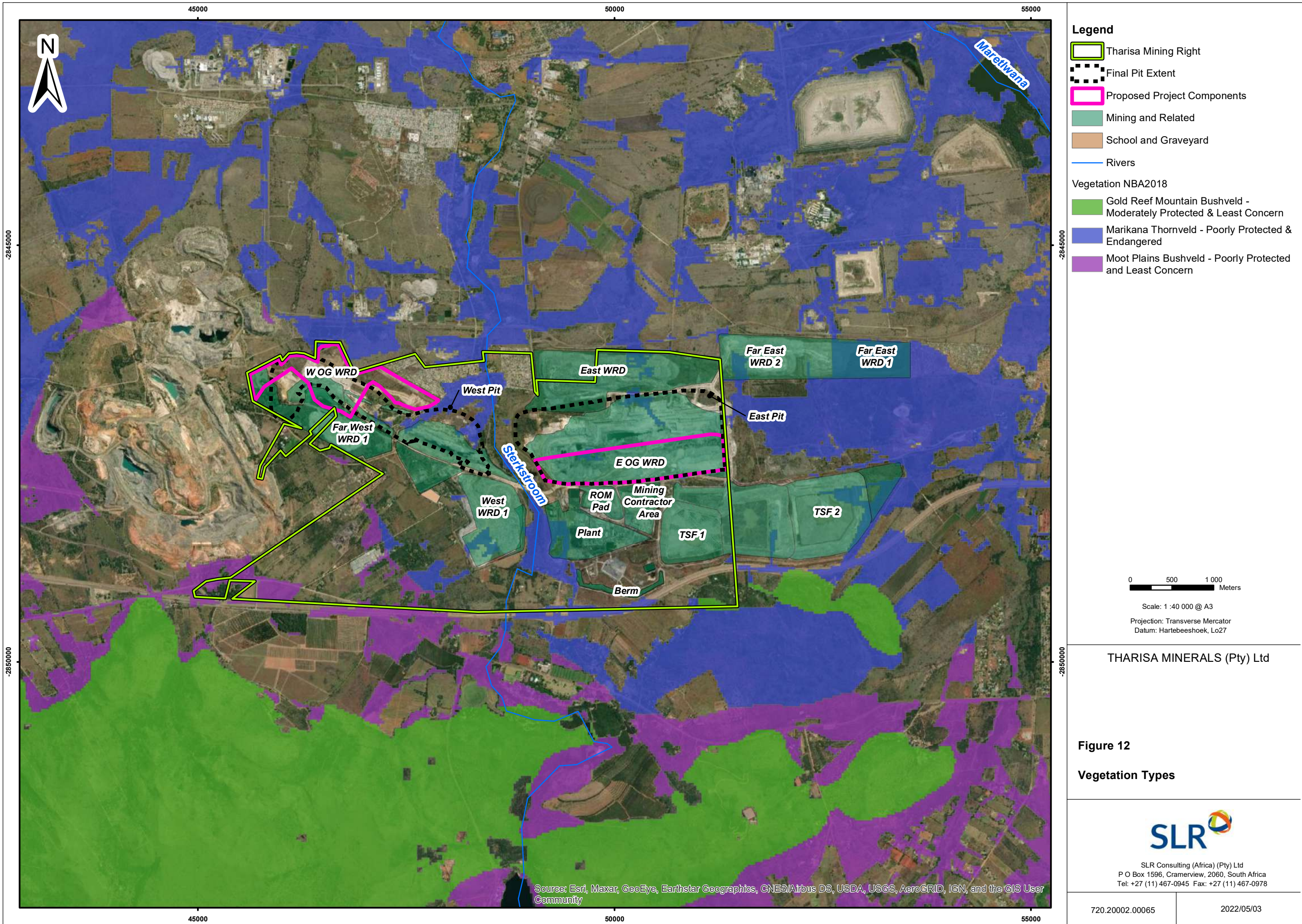
- The NEM:BA list of threatened ecosystems (2011);
- The Mining and Biodiversity Guidelines (DEA, et al, 2013);
- The 2018 National Biodiversity Assessment from the South African National Botanical Institute (SANBI) (SANBI, 2018);
- National Protected Area Expansion Strategy (NPAES);
- The North West Biodiversity Section Plan, 2015; and
- Important Bird Areas (2015).

Vegetation types

Tharisa Mine falls within the Savanna Biome, the Central Bushveld Bioregion and within the Marikana Thornveld, and Gold Reef Mountain Bushveld vegetation types (refer to Figure 12 (SANBI, 2018)). These vegetation types are described in more detail below:

- **The Marikana Thornveld:** This unit occurs in the North-West and Gauteng Provinces, on plains from the Rustenberg area in the west, through Marikana and Brits to the Pretoria area in the east. It is characterised by open *Vachelia karoo* woodlands, which occur in valleys and slightly undulating plains, and some lowland hills. This vegetation unit been significantly transformed through cultivation and urbanisation. This vegetation type is Endangered (SANBI, 2018); and
- **The Gold Reef Mountain Bushveld:** This unit occurs in the North-West, Free State, Gauteng and Mpumalanga Provinces. It occurs on the rocky quartzite ridges of the Magaliesberg and the parallel ridge to the south, from around Boshoeck and Koster in the west to near Bronkhortspruit in the east. It also occurs on the west-east trending ridge of the Witwatersrand from around Krugersdorp in the west, through Roodepoort and Johannesburg to Bedfordview. Inner ridges (e.g. Dwarsdberg and Witkop) of the Vredefort Dom on the Vaal River, north-west of Parys and part of the Suikerbosrand as well as other hills around Heidelberg (SLR, 2014). This vegetation unit is Least Critical (SANBI, 2018).

The total application area is approximately 181 ha. Of the total application area approximately 1 ha (within the West OG WRD) will be located on undisturbed mining areas and within the Marikana Thornveld vegetation type (Figure 12). These vegetation types have however been influenced by existing mining and community related activities. The Proposed Project area associated with East OG WRD will be established over backfilled portions of the East pit. It follows that the natural vegetation within these areas has already been removed as part of current opencast activities.



Terrestrial species of conservational concern

Sclerocarya birrea subsp caffra (Morula Tree) is present at the Tharisa Mine and is protected in terms of the National Forests Act (Act 84 of 1998). A permit must be obtained before this species may be removed from site. It is unlikely that these trees would be located within the proposed East OG WRD project area. The likelihood of occurrence could be in the West OG WRD project footprint located within undisturbed mining areas. This will be confirmed with specialist input.

Alien and Invasive Floral Species

Scattered alien and invasive plant species are located throughout the Tharisa Mine (Table 8-3) (SLR, 2014).

TABLE 8-3: ALIEN AND INVASIVE SPECIES IDENTIFIED IN THE THARISA MINING RIGHT AREA (SLR, 2014)

| Species Name | Common Name | Growth Form | Category |
|---------------------------------|--------------------------|-------------|------------|
| <i>Amaranthus spinosa</i> | Thorny pigweed | Forb | - |
| <i>Araujia sericifera</i> | Moth catcher | Shrub | Category 1 |
| <i>Argemone Mexicana</i> | Yellow Mexican Poppy | Forb | Category 1 |
| <i>Bidens pilosa</i> | Common Blackjack | Forb | Weed |
| <i>Datura ferox</i> | Large Thorn Apple | Forb | Category 1 |
| <i>Datura stramonium</i> | Common Thorn Apple | Forb | Category 1 |
| <i>Brachiaria eruciformis</i> | Sweet Signal Grass | Grass | Weed |
| <i>Eucalyptus camaldulensis</i> | Red river gum | Tree | Category 2 |
| <i>Euphorbia geniculate</i> | Wild Pointsettia | Succulent | Weed |
| <i>Galinsoga parviflora</i> | Gallant Soldier | Forb | Weed |
| <i>Gomphrena celosiodes</i> | Prostrate globe amaranth | Shrub | Weed |
| <i>Grevellia robusta</i> | Australian silky oak | Tree | Category 3 |
| <i>Hibiscus trionum</i> | Bladder Hibiscus | Forb | Weed |
| <i>Jacaranda mimosifolia</i> | Jacaranda | Tree | Category 3 |
| <i>Lantana camara</i> | Common Lantana | Shrub | Category 1 |
| <i>Lepidium bonariense</i> | Pepperweed | Forb | Weed |
| <i>Melia azedarach</i> | Syringa | Tree | Category 3 |
| <i>Morus alba</i> | White Mulberry | Tree | Category 3 |
| <i>Nicotiana glauca</i> | Wild Tobacco | Shrub | Category 1 |
| <i>Oxalis obliquifolia</i> | Oblique - leaved Sorrel | Forb | Weed |
| <i>Paspalum urvillei</i> | Vasey Grass | Grass | Weed |
| <i>Pennisetum setaceum</i> | Fountain Grass | Grass | Category 1 |
| <i>Persicaria lapathifolia</i> | Spotted Knotweed | Forb | Weed |
| <i>Persicaria serrulata</i> | Knotweed | Forb | Weed |
| <i>Populus x canescens</i> | Grey Poplar | Tree | Category 2 |
| <i>Physalis angulate</i> | Wild gooseberry | Shrub | Weed |
| <i>Prunus persica</i> | Peach tree | Tree | - |

| Species Name | Common Name | Growth Form | Category |
|---------------------------------------|------------------------|-------------|------------|
| <i>Pseudognaphallum luteo - album</i> | Cudweed | Forb | Weed |
| <i>Phytolacca dioica</i> | Belhambra | Tree | Category 3 |
| <i>Rumex crispus</i> | Curly Dock | Forb | Weed |
| <i>Salvia reflexa</i> | Mintweed | Forb | Weed |
| <i>Schkuhria pinnata</i> | Dwarf Marigold | Forb | Weed |
| <i>Sesbania bispinosa</i> | Spiny sessbania | Shrub | Weed |
| <i>Sida rhombifolia</i> | Arrowleaf Sida | Forb | Weed |
| <i>Solanum seaforthianum</i> | Slender Potato Creeper | Forb | Weed |
| <i>Sorghum halepense</i> | Aleppo Grass | Grass | Category 2 |
| <i>Tacoma stans</i> | Yellow bells | Tree | Category 1 |
| <i>Tagetes minuta</i> | Khaki Weed | Forb | Weed |
| <i>Tipuana tipu</i> | Tipu tree | Tree | Category 3 |
| <i>Verbena bonariensis</i> | Tall Verbena | Forb | Weed |
| <i>Veronica anagallis - aquatica</i> | Water Speedwell | Forb | Weed |
| <i>Xanthium strumarium</i> | Large cocklebur | Shrub | Category 1 |
| <i>Zinnia peruviana</i> | Redstar Zinnia | Forb | Weed |

Category 1 – Declared weeds. Prohibited plants, which must be controlled or eradicated.

Category 2 – Declared invader plants with a value. “Invaders” with certain useful qualities (i.e. commercial). Only allowed in controlled, demarcated areas.

Category 3 – Mostly ornamental plants. Alien plants presently growing in, or having escaped from, areas such as gardens, but are proven invaders. No further planting or trade in propagative material is allowed.

Animal life

The Tharisa Mining Right area has been extensively disturbed as a result of existing mining, community and private farming activities. It follows that there is very little evidence of animal life particularly within disturbed areas. There are however isolated pockets of natural vegetation that could support animal life. In this regard, the proposed West OG WRD project area is associated with some isolated pockets of natural vegetation. No animal species of conservation concern have been known to occur at the Tharisa Mine.

Aquatic life

The National Freshwater Ecosystem Priority Areas Project (NFEPA) was developed by SANBI, DWA and other stakeholders and organisations. This project was aimed at identifying strategic spatial priority areas for conserving South Africa’s freshwater ecosystems and supporting sustainable use of water resources. Based on the NFEPA classification system, the Proposed Project is does not intersect with any NFEPA watercourses.

National and provincial site sensitivity

The section below provides information on the sensitivity of the Proposed Project area in accordance with existing national and provincial databases. It is important to note, that although all data sources used provide useful and often verifiable, high-quality data, the various databases used do not always provide an entirely

accurate indication of the actual site characteristics. This information is however considered to be useful as background information to the Proposed Project, which will be ground truthed with specialist input.

The Mining and Biodiversity Guideline (DEA et al, 2013) provides explicit direction in terms of where mining-related impacts are legally prohibited, where biodiversity priority areas may present high risks for mining projects and where biodiversity may limit the potential for mining. The guideline distinguishes between four categories of biodiversity priority areas in relation to their importance from a biodiversity and ecosystem service point of view, as well as the implications for mining. The Proposed Project areas fall within areas considered to be of High Biodiversity Importance in terms of the Mining and Biodiversity Guideline (DEA et al, 2013) (Figure 13). High biodiversity importance areas are considered to be important for conserving biodiversity, supporting or buffering other biodiversity important areas and for maintaining important ecosystem services for particular communities or the country as a whole.

The NEMBA provides for listing of threatened or protected ecosystems. Threatened ecosystems are listed in order to reduce the rate of ecosystem and species extinction by preventing further degradation and loss of structure, function and composition of threatened ecosystems. The purpose of listing protected ecosystems is primarily to conserve sites of exceptionally high conservation value. The National Biodiversity Assessment (NBA) was led by the SANBI in partnership with the Department of Environmental Affairs and a range of other organisations. The study provides an assessment of South Africa's biodiversity and ecosystems. This assessment also provides a summary of biodiversity priority areas that have been identified through systematic plans at national, provincial and local levels. Sections of the Proposed Project area (refer to Figure 12) which is classified as vulnerable (SANBI, 2018).

The National Protected Areas Expansion Strategy, 2008 (NPAES) and aims to achieve cost effective protected area expansion for ecological sustainability and adaptation to climate change. The NPAES sets targets for protected area expansion, provides maps of the most important areas for protected area expansion, and makes recommendations on mechanisms for protected area expansion. According to the NPAES database, the Proposed Project areas do not fall within an area earmarked for expansion of a National Protected Area.

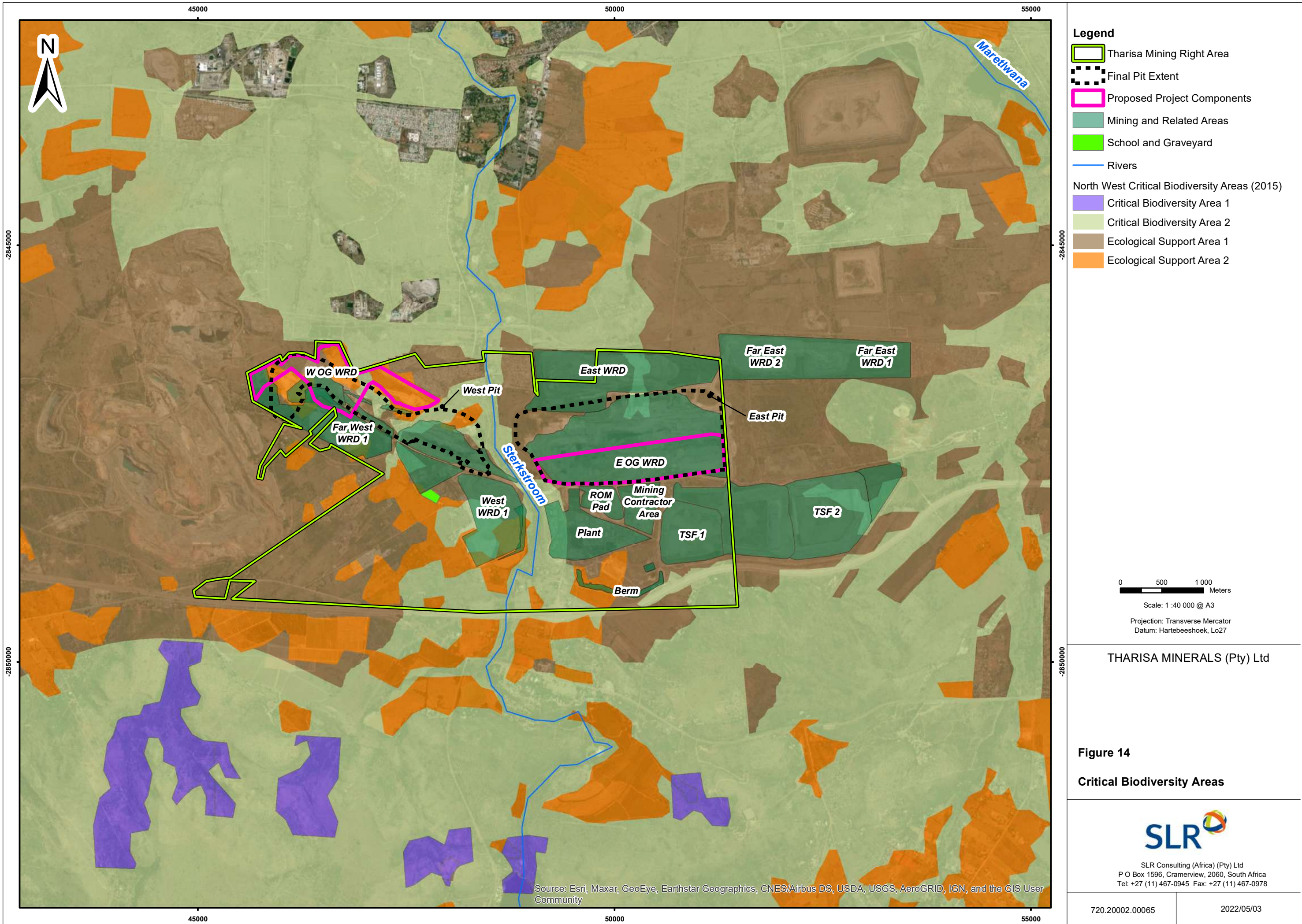
The North West Biodiversity Section Plan, 2015 informs land use planning, environmental assessments, land and water use authorisation as well as natural resource management undertaken by a range of sectors whose policies and decisions impact on biodiversity. This is done by providing a map of biodiversity priority areas referred to as Critical Biodiversity Areas (CBA's) and Ecological Support Areas (ESA). With reference to Figure 14, the proposed West OG WRD is located in Ecological Support Areas 1 and 2. Ecological Support Areas are terrestrial and aquatic areas that are not essential for meeting biodiversity representation targets, but which nevertheless play an important role in supporting the ecological functioning of critical biodiversity area delivering ecosystem services.

The Important Bird and Biodiversity Areas Programme (IBA) is an initiative by Birdlife International that seeks to conserve the important bird species and their habitats. A global scientific standard is used to determine the criteria which IBAs are selected - this includes bird species, sites, conditions of habitats and the people. The Proposed Project falls within a IBA which is partially protected. Partially protected IBAs have habitats which are mostly in an unfavourable state. The protection of IBAs is important as it assists in safeguarding a larger suite of biodiversity and is important in the maintenance of ecosystem services. The two most important bird species of concern in this IBA are the Secretary Bird and Cape Vulture, both of which have a high probability of occurrence in the project area.

The Proposed Project falls within the transitional zone of the Magaliesberg Biosphere. The formation of a biosphere is to assist in conserving the landscape by reducing biodiversity loss and maintaining the ecosystem services, promoting sustainable development through the Millennium Development Goals (MDGs) and improving economic, social and cultural conditions for environmental sustainability.

The protected Marula Tree is known to occur at the Tharisa Mine, and as follows could be disturbed if located within the footprints of West OG WRD. This will be confirmed through site work.





8.4.1.6 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 and/or runoff from waste rock dumps.

Information in this section was sourced from the approved EMPr (SLR, 2014) and recent monitoring data (Aquatico, March 2022).

Regional Hydrology

The Tharisa Mine is located within the Crocodile West and Marico Water Management Area. 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 (refer to Figure 2). Apart from the Sterkstroom, drainage lines within the mining area were not well defined and did/do not have distinct channels. 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 856km² and an estimated mean annual runoff of 22.46 million m³/year.

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. In the south eastern corner of the mine, a tributary of the Elandsdriftspruit which originated just south of the mine, falls within the footprint of TSF 2. The diversion of this tributary was included in the approved EIA and EMP report (Metago, 2008). The local hydrology is illustrated in Figure 15.

None of the proposed WRDs will intersect perennial or non-perennial drainage lines at the Tharisa Mine. In this regard, the East OG WRD is approximately 260 m from the Sterkstroom and the West OG WRD is approximately 267 m South from tributaries of the Brakspruit.

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.

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 (TM SW07, TM SW08, TM SW10, TM SW11, TM SW12, TM SW13 and TM SW14). The surface water quality is compared against the amended Integrated Water Use Licence (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 TM SW10 and TM SW13 which are alkaline.
- The SAWQG domestic water guidelines were **exceeded** by the parameters; EC, Ca, Mg, Na, SO₄ and NO₃-N at the majority of the process water localities (TM SW07 to TM SW14). All the variables measured at the Sterkstroom remained well **within** the SAWQG domestic water guidelines.
- The Mg, Na, SO₄ and NO₃-N measured at TM SW02 and TM SW03 **exceeded** the Baseline Data Guidelines while majority of the variables at TM SW01 remained below the guideline.
- 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 TM SW10, TM SW11, TM SW012, TM SW13 and TM SW14 were **lower** than the amended IWUL: 2020 guideline while the rest were **higher** than the guideline.
- 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. TM SW10 plotted **higher** than the amended IWUL: 2020 upper limit as well as TM SW13 for the past two months.
- The EC levels at TM SW02 and TM SW03 show **increasing** trends from August 2021 to November 2021 with a drop in December 2021 and then increased again. A drop in EC is seen at TM SW02, TM SW03, TM SW08 and TM SW11 during March 2022
- Long-term decreasing trend in most of the surface water locality but from December 2021, an increase is observed. During March 2022, the concentration of NO₃-N at majority of the localities decreased.

A more comprehensive record will be provided in the EIA and EMPr.

Flood Lines

As part of the 2008 EIA and EMP (Metago, 2008), peak flow rates and flood volumes for the 1:20, 1:50 and 1:100-year storm events were estimated by Metago for the Sterkstroom and Elandsdriftspruit tributary and are presented in Table 8-4 (SLR, 2014). Using the peak flows presented, the 1:50, 1:100-year and Regional Maximum Flood (RMF) flood-lines for the Sterkstroom River were modelled and are presented alongside the 100 m offsets in Figure 15. The 100 m buffers are presented for the other watercourses and considering the relatively small catchments of these other watercourses (Brakspuit Tributaries and Maretlwane Tributaries) which will generate only modest flood flows, the 100 m buffers are likely to be significantly wider than the 1:50 or 1:100-year flood-

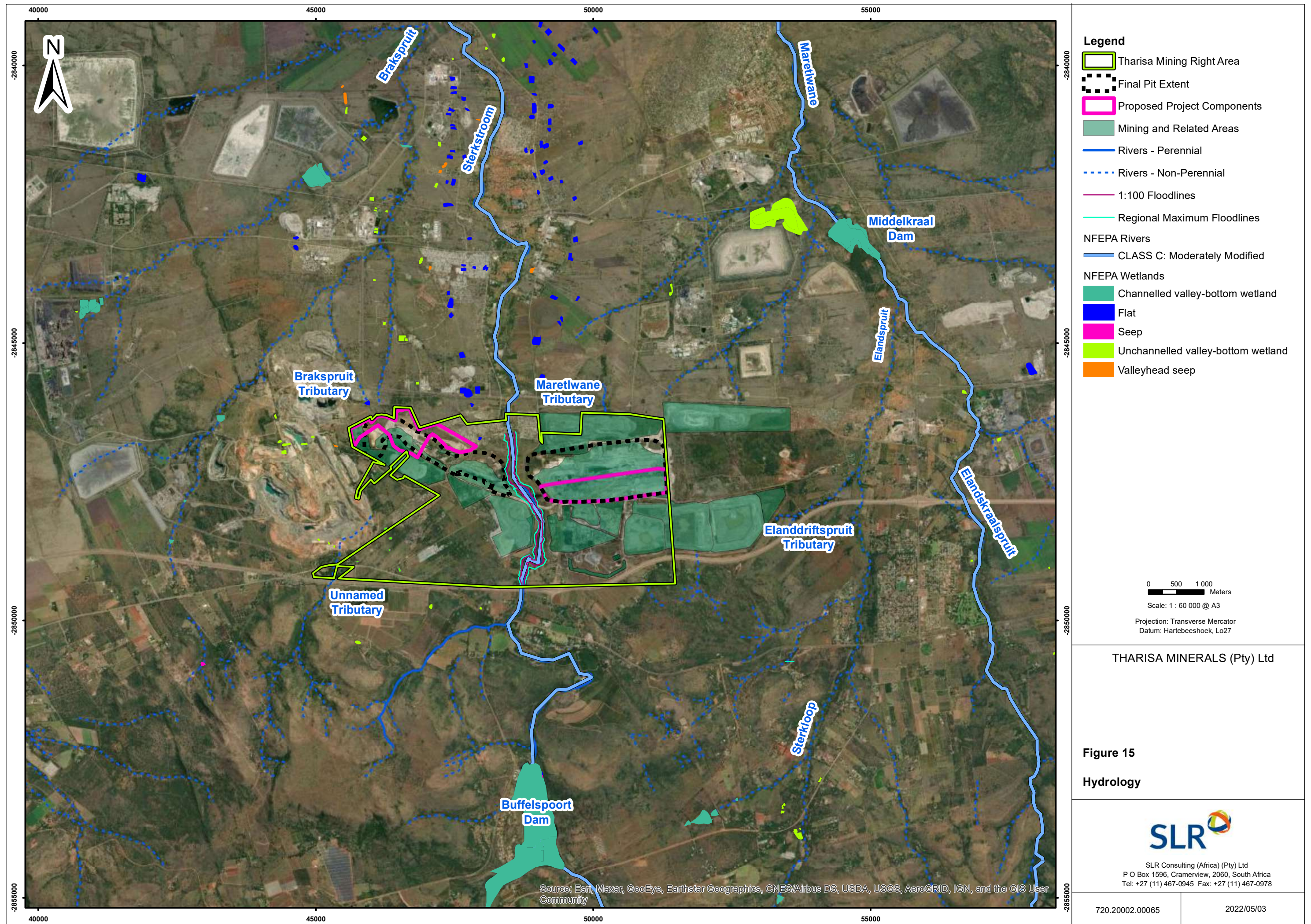
lines, and the 100 m buffers will be taken as the developmental constraint in these locations. None of the proposed WRD encroach on any of the flood lines.

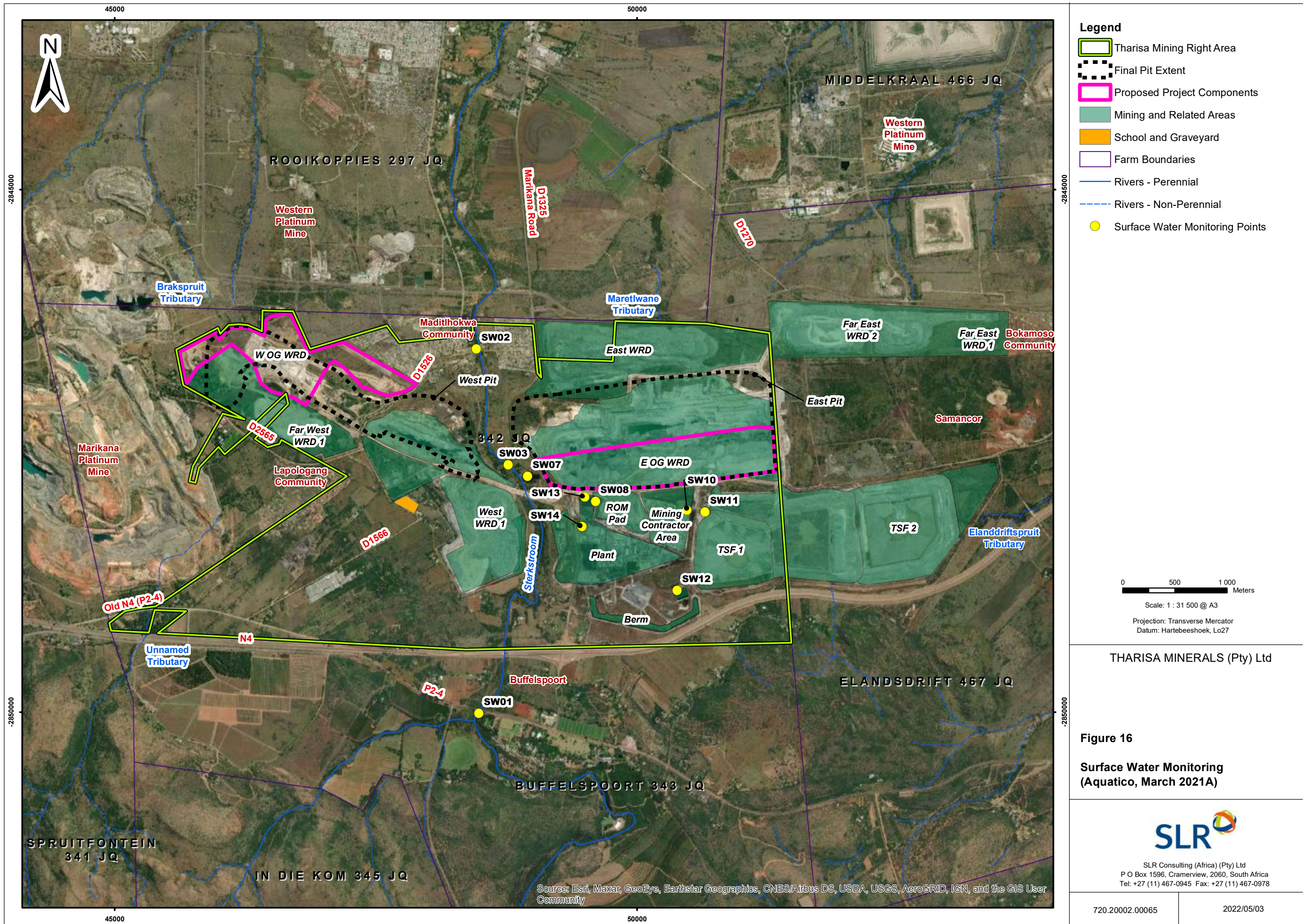
TABLE 8-4: FLOOD PEAKS AND VOLUME FOR STERKSTROOM AND ELANDRIFTSPRUIT TRIBUTARY (SLR, 2014)

| Catchment | Area (km²) | Return Period | | | |
|------------------------------------|------------|---------------|-------|-------|------|
| | | 1:20 | 1:50 | 1:100 | RMF |
| Peak Flow Rate (m³/s) | | | | | |
| Sterkstroom | 140.3 | 314 | 444 | 544 | 1185 |
| Elandsdriftspruit tributary | 3.3 | 25 | 35 | 43 | 181 |
| Flood Volume (x10 ⁶ m³) | | | | | |
| Sterkstroom | 140.3 | 7.36 | 10.39 | 12.73 | - |
| Elandsdriftspruit tributary | 3.3 | 0.14 | 0.19 | 0.24 | - |

Wetlands

With reference to Section 8.4.1.5 the Proposed Project does not intersect with any wetlands.





THARISA MINERALS (Pty) Ltd

Figure 16
Surface Water Monitoring
(Aquatigo, March 2021A)



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8.4.1.7 Groundwater

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 development. 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.

Information pertaining to aquifer characteristics was sourced from the Aquifer Classification Map of South Africa. Other information in this section as sourced from the approved 2014 EMPr (SLR, 2014) and recent monitoring data (Aquatico, September 2021).

Aquifer Classification

The 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 characterized 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 water courses 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 (SLR, 2014).

Groundwater Recharge

Quaternary catchment A21K receives an estimated average annual groundwater recharge of 24.4 million m³ (Mm³), of which 3.4 Mm³ per annum or 13.8% is required for the Reserve, consisting of both basic human needs (estimated at 0.5Mm³/a) and an ecological component (estimated at 2.9Mm³/a). This equates to an approximate recharge across the catchment of about 28 mm/a (SLR, 2014).

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 Mine area were on average 10 mbgl with a range of 2 to 30 mbgl (SLR, 2014). Based on groundwater monitoring data (Aquatico, September 2021) for the period January 2021 to March 2021, groundwater levels range between 2 to 22 mbgl.

Groundwater Use

The majority of the groundwater in the broader region is used in the form of third-party boreholes. 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 (SLR, 2014). Boreholes (community boreholes/third party) located within the Tharisa Mining Right area are used for domestic purposes and agricultural purposes (livestock and irrigation).

Groundwater Quality

Tharisa monitors groundwater quality on a monthly basis as part of its groundwater monitoring programme. The monitoring programme includes monitoring community boreholes (TM GW COMM 01, TM GW COMM 02, TM GW COMM 05 and TM GW COMM 06) within the Tharisa Mine area and mine boreholes (TM GW Dissipator 1, TM GW Dissipator 2, TM GW HP5, TM GW MCC, TM GW RPM, TM GW Sec, TM GW TSF 01, TM GW WM 03, TM GW EM01, TM GW EM02, TM GW WM01 and TM GW FW01). Community boreholes are used by third parties, while the mine boreholes are used by Tharisa 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 indicate the following for community boreholes/third party (Aquatico, September 2021):

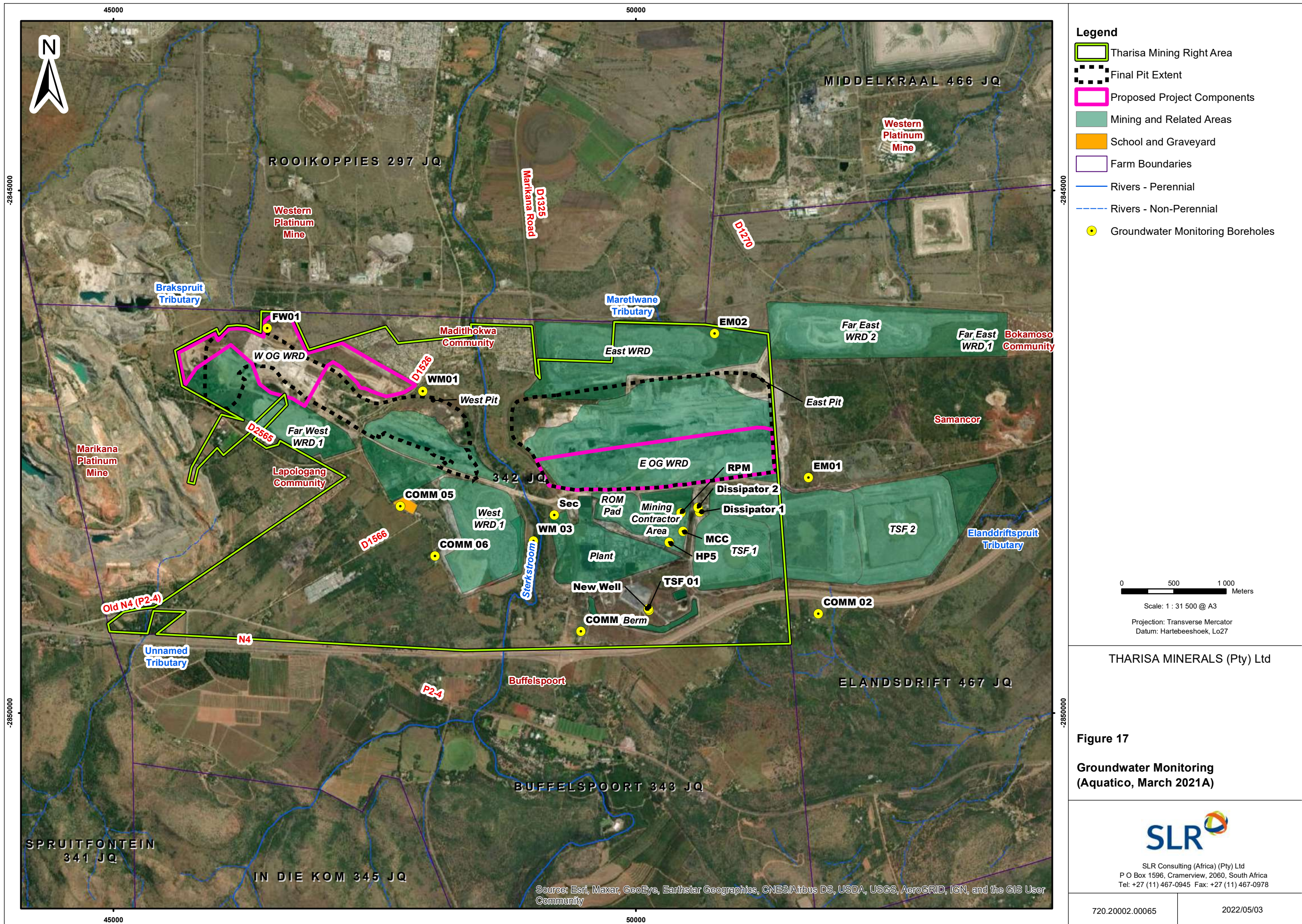
- The Electrical conductivity (EC), calcium (Ca), magnesium (Mg), sodium (Na), chloride (Cl), sulphate (SO₄) and nitrate (NO₃-N) concentrations exceeded the IWUL drinking guideline limits at most of the community groundwater monitoring locations. According to the classification system of the WRC (1998) "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- TW GW COMM2, TM, GW COMM 05 and TM GW COMM06) and good (suitable for lifetime use – TM GW 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 Electrical conductivity (EC), calcium (Ca), magnesium (Mg), sodium (Na), chloride (Cl), sulphate (SO₄) and nitrate (NO₃-N) concentrations exceeded the IWUL: 2020 guideline values 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 – TW GW New Well), marginal (can be used by most individuals – TM GW HP5 and TM GW TSF 01 and TM GW TSF HP5), poor (poses a health risk – TM GW MCC and TM GW SEC) and Unacceptable (No suitable for use - TM GW 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 NO₃-N concentrations measured at TM GW MCC (hard park), TM GW RPM (workshop), TM GW SBH (Samancor borehole), TM GW Sec (security) and TM GW 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 TM GW RPM (workshop) and TM GW SBH (security), Cl at security.

The September 2021 monitoring report (Aquatico, September 2021) noted that the community boreholes exceeded the IWUL drinking guideline limits. However, the water quality from these boreholes are 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 EIA and EMP.



8.4.1.8 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.

Information in this section was sourced from the approved EMPr (SLR, 2014) and the monitoring results for the period 2021 (Aquatico, January 2022a; Aquatico, February 2022b; Aquatico, March 2022c).

Ambient Air Quality Surrounding the Tharisa Mine

The following regional sources of emissions were identified:

- Stack, vent and fugitive emissions from industrial operations - industrial emissions include various criteria pollutants (as SO₂, NO_x, CO and particulates), greenhouse gases (CO₂ and CH₄), 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, SO₂, CO, VOCs and CO₂. 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 (SO₂, NO_x, CO, lead and particulates), acid gases (hydrogen chloride, hydrogen bromide, hydrogen fluoride), metal gases (chromium, arsenic, cadmium, mercury, manganese, 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, SO₂, methane, CO₂ 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 CO₂, CO, hydrocarbons (HCs), SO₂, NO_x, particulate matter and lead;
- Household fuel combustion (coal, wood) - coal burning emits a large amount of gaseous and particulate pollutants including SO₂, heavy metals, total and respirable particulates including heavy metals and inorganic ash, CO, polycyclic aromatic hydrocarbons (PAHs), NO₂ and various toxins such as benzo(a)pyrene. Pollutants from wood burning include respirable particulates, NO₂, 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.

Dust Fallout

A dust fallout monitoring network is in place at the Tharisa Mine with monitoring locations placed at residential and non-residential locations (see Figure 19). 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 NDCR guidelines for industrial areas of 1 200 mg/m²/day and residential areas of 600 mg/m²/day. The results indicated (Aquatico, January 2022a; Aquatico, February 2022b; Aquatico, March 2022c) that for the period January 2022 to March 2022, dust fallout was within the NDCR guideline limits.

TABLE 8-5: DUST FALLOUT MONITORING RESULTS (AQUATICO, JANUARY 2022A; AQUATICO, FEBRUARY 2022B; AQUATICO, MARCH 2022C)

| Name | Description | Classification | Total Deposition Rate (mg/m ² /day) | | |
|--------|--------------------|-----------------|--|---------------|------------|
| | | | January 2022 | February 2022 | March 2022 |
| TM D01 | Ind TP | Non-residential | 1030 | 911 | 645 |
| TM D02 | Toll Gate | Residential | 95 | 183 | 130 |
| TM D03 | North of West Mine | | 222 | 357 | 560 |
| TM D04 | Ind N4 2 | Non-residential | 139 | 228 | 266 |
| TM D05 | Ind N4 1 | | 203 | 133 | 168 |
| TM D06 | Ind Lonmin 1 | | 175 | 167 | 231 |
| TM D08 | School | Residential | 313 | 527 | 209 |
| TM D09 | Glenross | | 122 | 194 | 263 |
| TM D11 | Lapologang | | 240 | 233 | 247 |
| TM D12 | Mmaditlhokwa 1 | | 303 | 377 | 466 |
| TM D13 | Mmaditlhokwa 2 | | 273 | 444 | 218 |
| TM D14 | Ind Lonmin 2 | Non-residential | 427 | 431 | 438 |

| Name | Description | Classification | Total Deposition Rate (mg/m ² /day) | | |
|----------|----------------|----------------|--|---------------|------------|
| | | | January 2022 | February 2022 | March 2022 |
| TM D19 | Bokamoso | Residential | 248 | 192 | 298 |
| TM D20 | Mmaditlhokwa 3 | | 243 | 254 | 252 |
| TMDKiep1 | TMDKiep1 | | 405 | 202 | 160 |

Passive SO₂ and NO₂ sampling

Passive sampling of SO₂ and NO₂ is undertaken at the Tharisa Mine monthly and compared to the NAAQS. None of the sampling undertaken for the period January to March 2022 exceeded the NAAQS guideline limits for SO₂ and NO₂. Refer to Figure 19 for the location of the passive sampling points.

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 National Ambient Air Quality Standard (NAAQS) for all the campaigns at almost all the locations (see Figure 18). 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 National Ambient Air Quality Standard (NAAQS).

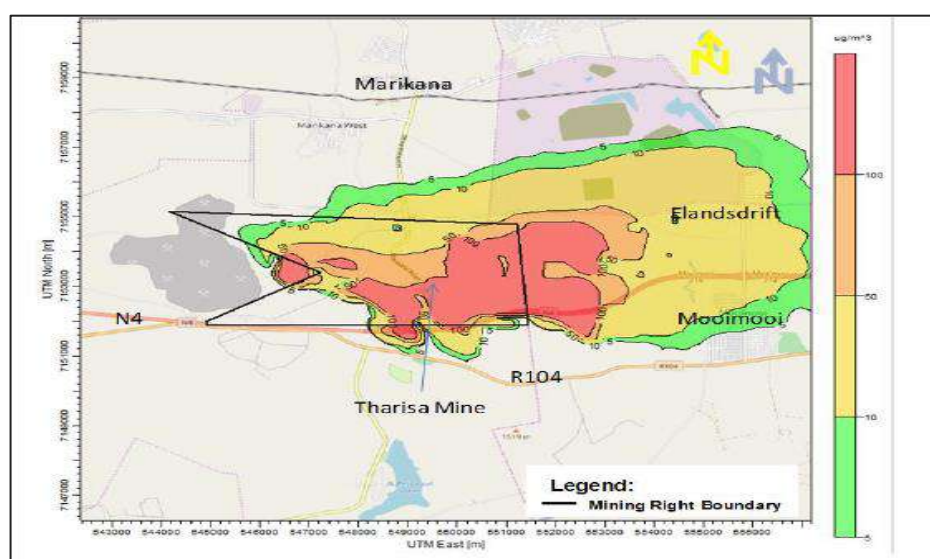
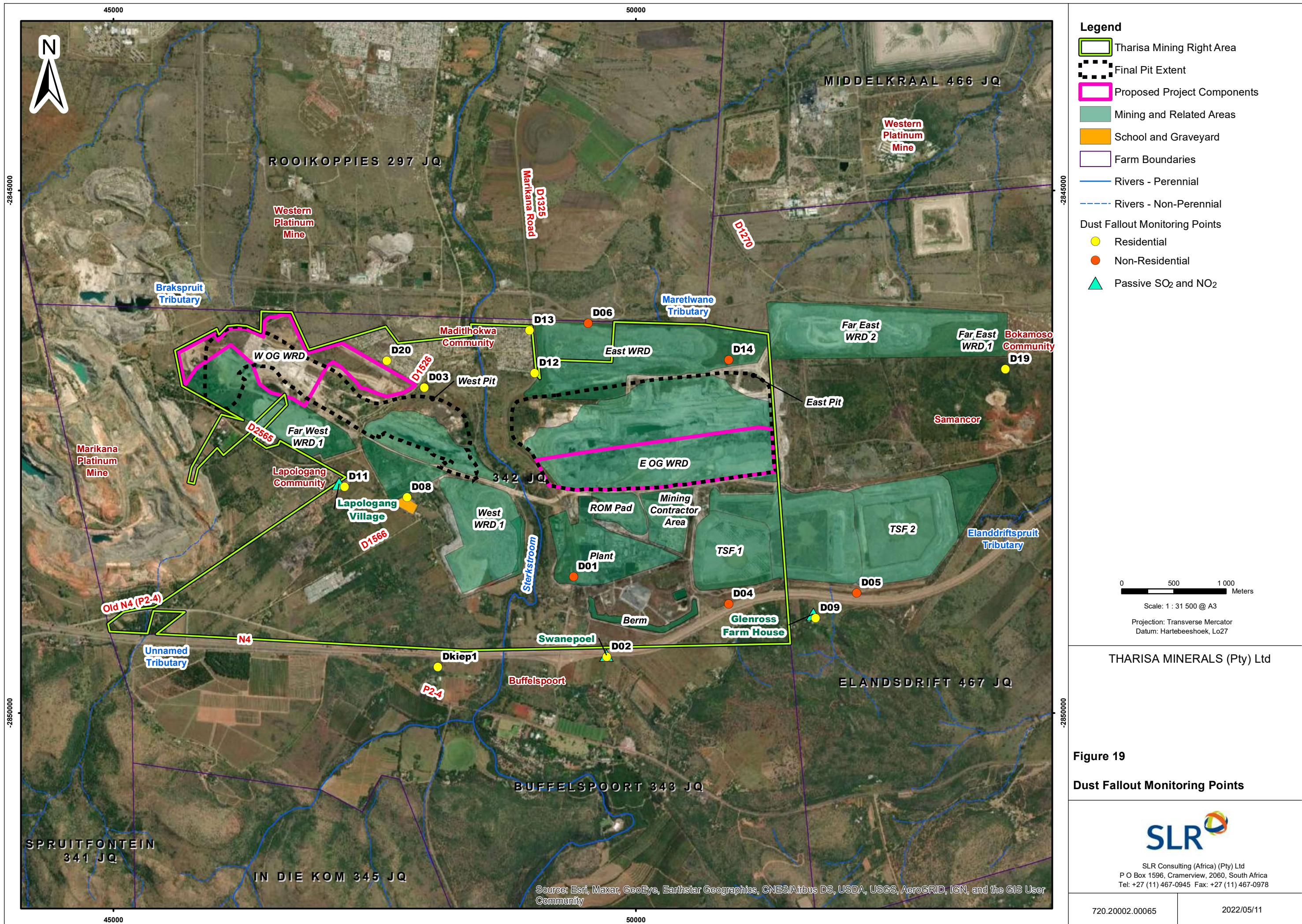


FIGURE 18: MAXIMUM 24-HOUR PM₁₀ CONCENTRATIONS (99TH PERCENTILE) WITH THE NAAQS GUIDELINE AT 75 µg/m³ (LTD, 2019)



Potential Air Quality receptors

The potential noise sensitive receptors near the Proposed Project areas includes the Mmadithlokwa and Lapologang communities, Piet Retief Primary school and farmers.

8.4.1.9 Noise

Noise generating activities associated with the Proposed Project could cause an increase in ambient noise levels in and around the mining area. This may cause a disturbance to nearby receptors.

Information in this section was sourced from the approved EMPr (SLR, 2014) and the annual noise monitoring exercise undertaken for the mine (BVZ, 2021).

Pre-mining Ambient Noise

Although the area around Tharisa Mine has some rural elements, the pre-Tharisa environment was subjected to elevated noise levels, mainly caused by the various mining operations in the area, road traffic and general community activities (including small business and farming). Despite this, in the absence of quantitative and site-specific measured data, a conservative assumption was made in the approved EIA and EMP report (MetagoEIA2008) that the SANS 10103 noise levels for a rural environment would apply. It follows that the assumed noise levels were 45 dBA during the day and 35 dBA at night. This did not apply to impact zones associated with the N4 highway, which would not be rural in nature.

Current Ambient Noise

The 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 D1325 (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 (BVZ, 2021), however the lockdown restrictions were still in effect. In this regard, the measured noise levels were predominantly from the Tharisa mining operations and are not a true reflection of current ambient noise conditions associated with Tharisa. It follows that the results from previous surveys conducted under normal mining and plant operations found:

- The current night-time noise impact on residents of Lapologang is 5 dB above the baseline level amounts. This is a significant impact of moderate magnitude. The primary contributor to this 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 are 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 current night-time noise impact on residents of Madithlokwa is 6 dB. This is a significant impact of moderate magnitude. The primary contributor to this 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 this area during daytime are trucks and other traffic on the D1325 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 means that the impact currently experienced by residents is 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 has steadily increased by 5 dB from 2017 to 2021. The primary contributor to this impact was noise the Tharisa Plant. The current night-time noise impact is 9 dB, which is a significant impact of very high magnitude. During daytime noise in this area is predominantly dominated by traffic on the D1325 and the N4.

Potential Noise Sensitive Receptors

The potential noise sensitive receptors in close proximity to the Proposed Project areas includes the Bokamoso, Mmadithlokwa and Lapologang communities, Piet Retief Primary school and farmers.

8.4.1.10 Visual Aspects

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.

Information in this section was sourced from aerial imagery, site visits undertaken by the project team and the approved EMPr (SLR EIA, 2014).

Landscape Character

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 Mine area, the area is relatively flat and the East and West mining sections are separated by the perennial Sterkstroom River

and the D1325 (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 (West OG WRD and East OG WRD). However, there are still scattered patches of natural habitat within West OG WRD.

Scenic Quality

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 Tharisa Mining Right area is made up of disturbed portions of land as a result of Tharisa's mine-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 D1325 (Marikana Road) is in close proximity and contributes a low scenic quality in contrast to the aforementioned natural features.

The Proposed Project areas is characterised by mine-related infrastructure and activities, whereas West OG WRD consists of scattered patches of natural vegetation which have been disturbed by community activities. It follows that the overall scenic quality within the Proposed Project area is very low to low.

Sense of Place

The sense of place results from the combined influence of landscape diversity and distinctive features. The primary informant of these qualities is the spatial form and character of the natural landscape taken together with the cultural transformations and traditions associated with the historic use and habitation of the area. The project areas are located within the current Tharisa Mine operations and within a "mining belt". Surrounding existing mining operations and the infrastructure that supports these mines dominates the area to the north, west and east of the Tharisa Mine. It follows that the immediate area within and surrounding the project areas has a relatively weak sense of place (when the viewer is within the mining belt). However, seen in context with the site contained by distant hills and the Magaliesberg Mountain Range, the harsh nature of the mining activities is "softened" (when the viewer views the area from outside the mining belt) and the larger area has a stronger sense of place.

Visual Receptors

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 project areas are 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 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.

8.4.2 BASELINE CULTURAL ENVIRONMENT AFFECTED BY THE PROPOSED PROJECT

8.4.2.1 Heritage / Cultural and Palaeontological Resources

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 publicized (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).

Information pertaining to heritage resources was sourced from the approved EMPr (SLR, 2014). Information pertaining to palaeontological sensitivity was obtained from the review of available literature.

Cultural Heritage background

Tharisa Mine is located in the Central Bankeveld of the North West Province of South Africa. The Central Bankeveld is covered by older granites penetrated by younger volcanic 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.

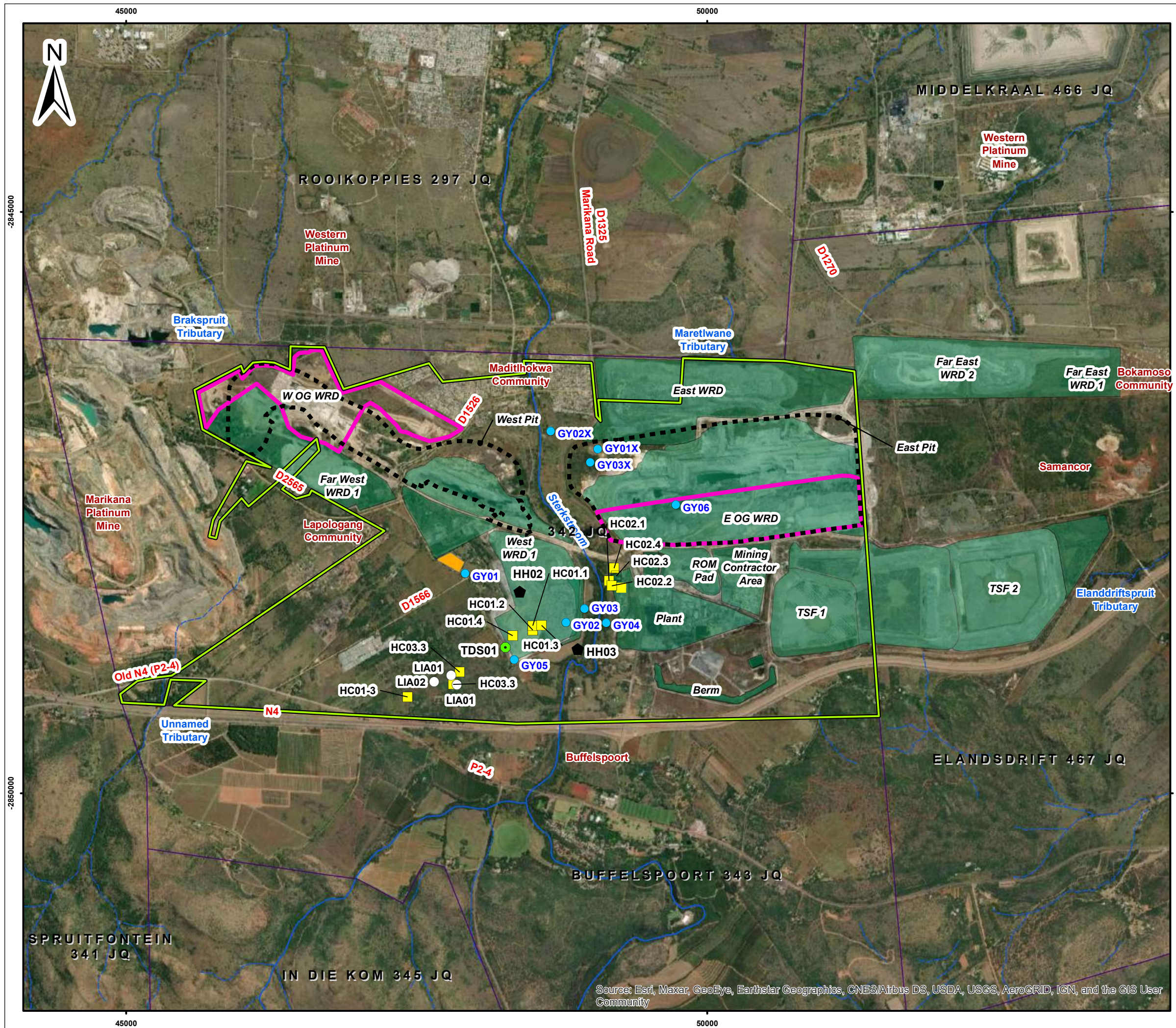
Tharisa is also located to the north of the Magaliesberg Mountain range, which is known for its rich and diverse range of heritage resources. Various Stone Age sites are scattered along the Magaliesberg and are also located within caves and rock shelters within the mountain. Rock engraving sites have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

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 (refer to Figure 20). With reference to Figure 20, graveyards were located within the east pit area. These have been relocated in line with the approved EIA and EMP (Metago, 2008).

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 SAHRIS indicates the palaeosensitivity within the project area as “grey” denoting an insignificant / zero palaeosensitivity.



- Legend**
- Tharisa Mining Right Area
 - Final Pit Extent
 - Proposed Project Components
 - Mining and Related Areas
 - School and Graveyard
 - Farm Boundaries
 - Rivers - Perennial
 - Rivers - Non-Perennial
- Heritage Resources**
- Late Iron Age Sites
 - Historical Houses
 - Historical Structures
 - Tobacco Drying Shed
 - Graveyards

0 500 1 000 Meters
Scale: 1 : 31 500 @ A3
Projection: Transverse Mercator
Datum: Hartbeeshoek, Lo27

THARISA MINERALS (Pty) Ltd

Figure 20
Heritage Resources



SLR Consulting (Africa) (Pty) Ltd
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8.4.3 BASELINE SOCIO-ECONOMIC ENVIRONMENT AFFECTED BY THE PROPOSED PROJECT

8.4.3.1 Socio-Economic

Typically mining projects have the potential to result in both positive and negative socio-economic impacts. The positive impacts are usually economic in nature with projects contributing directly towards employment, procurement, skills development and taxes on a local, regional and national scale. In addition, projects indirectly contribute to economic growth in the national, local and regional economies. The negative impacts can be both social and economic in nature and related to the influx of people seeking job opportunities (with related social ills and pressures on existing services) and a change to existing land uses (with related changes to social structures and way of life).

Information in this section was sourced from FEED 2018/19 Overview of Provincial Revenue and Expenditure, Bojanala 2020/2021 Review IDP, North West Province Integrated Waste Management Plan 2016.

The Tharisa Mine is located in the Bojanala District Municipality and Rustenburg Local Municipality of the North West Province. The nearest formal towns to the mine are the towns of Marikana and Mooi-nooi, located approximately 4 km north west and 6 km south east of the Tharisa Mine, respectively. Smaller communities such as Lapologang village (480 m south of West Pit), Mmaditlhokwa/Silver City (immediately north of West Pit) and Buffelspoort (450 m south of the N4) are located in close proximity to the mine. Various other clusters of land dwellers/informal settlements are in the located in the general vicinity as well.

North West Province

The North West Province had a population of approximately 4 million people in 2019. In 2016 the unemployment rate in the Province was estimated at 32%, which was slightly higher than the unemployment rate in South Africa (29%). The North West Province is the fourth largest contributor to South Africa's GDP, with a contribution of 6.7% and a GDP per capita of R55 320. Mining, agriculture and manufacturing contribute to the largest portion of provincial output. Only 9% of the population in the province has tertiary education, while only 67% of the total population has secondary education. Service delivery within in the Province remains a challenge, with only 63% and 87.7% of households having access to piped water (inside dwelling and inside yard) and electricity, respectively.

Bojanala District Municipality and Rustenburg Local Municipality

The socio-economic environment at district and local municipal levels can be summarised as follows:

- The population of the District Municipality is estimated to be 1 670 000. This is approximately 41.75% of the total population of the North West Province. The Rustenburg Municipality is the largest municipality within the District, with a population concentration of approximately 37% of the total population of District Municipality (617 900). The total number of households within District Municipality increased at an average annual rate of 3.63% from 2006 to 2016, which is higher than the average annual increase of in the number of households in South Africa (1.97%);
- In 2016, the largest share of population was within the young working age (25-44 years) age category which constituted 36.4% of the total population;

- In 2016, the mining sector was the largest economic contributor within the District Municipality, accounting for R 63.5 billion or 51.1% of the total Gross Value Added (GVA) in the District Municipality's economy. The sector that contributes the second most to the GVA of the District Municipality is the community services sector (12.7%), followed by the finance sector (10.4%);
- The unemployment rate within the District Municipality was estimated at 23.2% in 2014;
- The District Municipality can largely be classified as rural with very low population densities that make the provision of basic services very difficult and expensive. It is estimated that the district has the following dwelling types: very formal- 19.24%, formal – 50.05%, informal- 29.45%, traditional- 0.58% and other dwelling types- 0.67%. The Local Municipality has high proportional and actual number of households residing in informal dwellings, as compared to other local municipalities. Within the Local Municipality, it is estimated that as much as 30% of households are residing in informal dwellings;
- It is estimated that approximately 452 000 of the households in the District Municipality have electricity for lighting and other purposes. The Rustenburg Local Municipality accounts for 40.9% of those households;
- The District Municipality had a total number of 275 000 households with piped water inside the dwelling and piped water inside the yard. The Rustenburg Local Municipality accounts for 29.1% of those households; and
- The amount of waste collected by the different municipalities within the District Municipality on a weekly basis as part of their legal mandate has been estimated at 314 235 tonnes per annum. These municipalities collect more than half of the domestic and garden waste generated by the population as this collection figure includes for business waste in certain of the municipalities. Of the five local municipalities in the district, the Rustenburg Local Municipality provides the greatest percentage of waste collection and cleaning services to their communities. There are currently 12 operational landfills/waste sites within the District identified, four of which are located within the Rustenburg Local Municipality.

8.4.3.2 Traffic

Traffic from mining projects has the potential to affect the capacity of existing road networks, as well as result in public road safety issues.

Information in this section was sourced through the review of available literature and topographical maps, as well as from the approved EMP_r (SLR, 2014).

Road networks

A network of roads exists in and around Tharisa Mine. These include (refer to Figure 2):

- N4;
- P2-4 (Old N4);
- D2565 – a gravel road in the far western section of the area;
- D1526/1566 - the main gravel road servicing the western part of the area;
- D1325 – Marikana Road;
- D108 – road between Marikana and Rustenburg;
- internal Lonmin tarred road to the north of the area, that runs east – west;

- D1270 – a gravel road linking the eastern part of the area with Mooinooi; and
- Various unnamed, private gravel/dirt roads.

Mine-related traffic is largely limited to internal mine roads. The mine does however make use of external roads for the transport of staff and PGMs for sale to third parties.

8.4.3.3 Current Land Uses

Mining-related activities have the potential to affect land uses both within the mine area and in the surrounding areas. This can be caused by physical land transformation and through direct or secondary impacts. The key related potential environmental impacts are loss of soil, loss of biodiversity, air pollution, noise pollution and visual impacts.

Mining Right and land ownership details were sourced from Tharisa. Surface right information was sourced from a deed search undertaken by SLR. On-site and surrounding land use data was sourced from site observations, the review of topographical maps and satellite imagery and from the approved EMPr (SLR, 2014).

Mining Rights

Tharisa holds a Mining Right (MR) (Reference No.: 358 MR) issued by the Department of Minerals and Energy (DME) (currently the Department of Mineral Resources and Energy (DMRE)) on 19 September 2008. Neighbouring mines with Mining Rights include Aquarius Marikana Platinum Mine to the west, Lonmin Platinum's Western Platinum Mine to the north and Samancor Western Chrome Mine and Mamba Chrome Mine to the east.

Surface rights in the Proposed Project area

Most of the land within the Mining Right Area is owned by Tharisa, while some properties are privately-owned. Land surrounding the Mining Right Area is owned by mining companies, businesses, trusts, the South African Government, and private owners. A list of all portions and the corresponding owners located in the Proposed Project area are provided in Table 8-6 below.

TABLE 8-6: SURFACE RIGHTS WITHIN THE PROPOSED PROJECT AREA

| Farm name | Portion number | Landowner |
|------------------------------|---|----------------------------|
| West Above Ground WRD | | |
| 342 JQ | 12, 150, 109, 11, 358, 357, 190, 29, 30, 105, 118, 13, 117, 48, 47, 41, 334, 335, 336 19, 266, 318, 213, 212, 262, 259, 26, 28, 27, 25, 74, 16, 214, 15 and 206 | Tharisa Minerals (Pty) Ltd |
| East Above Ground WRD | | |
| 342 JQ | 152, 138, 96, 183, 218, 219, 220, 184, 186 and 251 | Tharisa Minerals (Pty) Ltd |

Land claims

The Land Claims Commissioner has been contacted to confirm if any land claims have been lodged on the properties that the project activities are located on. On 24 May 2021 the Land Claims Commissioner confirmed that a land claim was associated with the project property, however the claim was dismissed on the basis that minimum requirements in terms of the Land Rights Act No. 22 of 1994 were not met. Proof of correspondence is included in Appendix C.

Land use within the Proposed Project area

The Proposed Project is located within the existing Tharisa Mining Right Area. Land uses within the Proposed Project area is tabulated below.

TABLE 8-7: LAND USE WITHIN THE PROPOSED PROJECT AREAS

| Proposed Project area | Land use within Proposed Project footprint |
|-----------------------|---|
| West OG WRD | <ul style="list-style-type: none"> Tharisa mining related activities which will be located over backfilled portions of the open pit; and Isolated vegetation patches in the northern section. |
| East OG WRD | <ul style="list-style-type: none"> Tharisa mining related activities and will be located over backfilled portions of the open pit |

Land uses surrounding the Proposed Project area

Agriculture

There are several land users that are actively involved in subsistence and/or commercial farming activities such as livestock, piggery, growing citrus fruits and vegetables in the vicinity of the Tharisa mine. There are also land users who own small businesses such as accommodation (bed and breakfast places and lodges), shops and restaurants.

Due to overgrazing and subsistence farming practices by informal dwellers, as well as the collection of vegetation mainly for firewood, parts of the area have been transformed by misuse.

Residential and towns

Residential land use i.e. formal, informal and farmsteads is one of the mainland uses near the mine. The nearest town / residential areas to the Tharisa Mine include (Refer to Figure 22):

- Lapologang located approximately 640 m south of the proposed West OG WRD;
- Mmaditlhokwa located immediately north of the proposed West OG WRD;
- Bokamoso located approximately 13 km from the proposed West OG WRD;
- Private property owner of Portion 110 – Mr PHC Wolvaardt and Mrs HM Wolvaardt located approximately 500m south of the proposed West OG WRD;
- Private property owner Portion 139 – Mr GJC Pretorius and Mrs SC Pretorius located approximately 1.1 km south of the proposed West OG WRD;

- Private property owner Portion 196 – Ms N van der Hoven located approximately 550m south of the proposed West OG WRD;
- Private property owner Portion 305 – Mr GJC du Preez and Mrs MD du Preez located approximately 1.8 km south of the proposed West OG WRD
- Buffelspoort located approximately 2.7 km south of the N4;
- Various other clusters of land dwellers/informal settlements in the general vicinity; and
- Formal towns such as Marikana and Mooinooi located approximately 4.7 km north west and 5.5 km south east, respectively.

Community Facilities

- Retief Primary School located approximately 1.2 km south west of the proposed West OG WRD and 1.1 km east of the proposed West OG WRD;
- Mmaditlhokwa community centre located approximately 500 m from the proposed West OG WRD; and
- A graveyard located approximately 1.1 km south west of the proposed East OG WRD.

Infrastructure and Servitudes

Infrastructure present in the area is directly linked to the type of land uses in the area as described above. The following infrastructure and servitudes have been identified in and around the Proposed Project area:

- Railway: There is a railway siding at Marikana town to the north of Tharisa Mine and an associated railway line running in an east-west direction;
- Irrigation supply: Infrastructure (pipes and canals) associated with the Buffelspoort Irrigation Board canals traverse various sections of the mine area in a south-north direction;
- Power supply and communication: A 275kV power line, and associated ESKOM servitude, cross through the eastern part of the mine area in a north-south direction, to the east of the eastern open pit. Smaller rural power lines and telephone lines currently service the residential areas within the western and eastern sections of the mine area; and
- Villages: Within the towns and villages, there are varying degrees of infrastructure and service provision.

Surrounding Mines

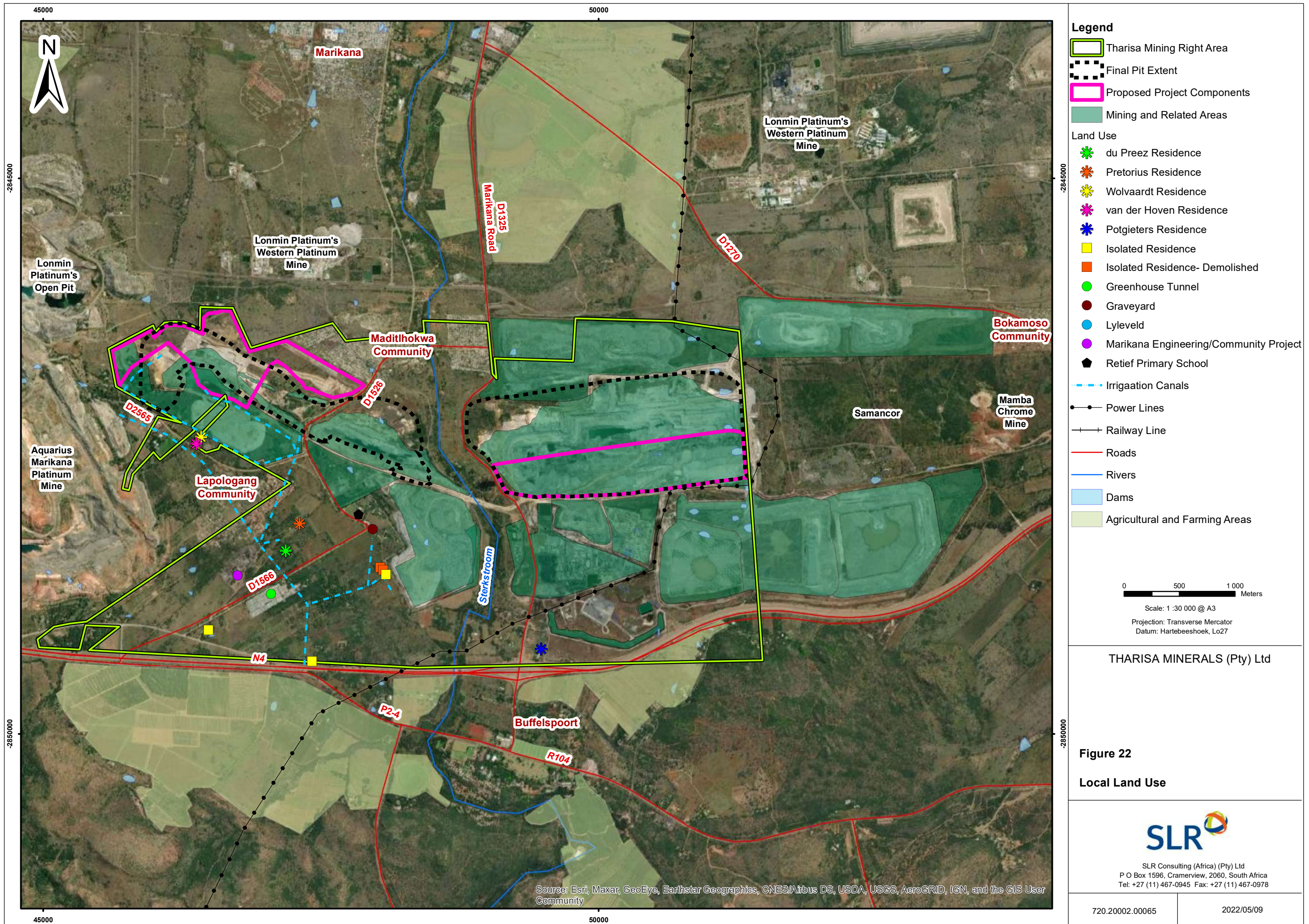
Various other mining operations located in the immediate vicinity of the Tharisa Mine, these include:

- Aquarius' Marikana Platinum Mine;
- Lonmin Platinum's open pit;
- Lonmin Platinum's Western Platinum Mine;
- Lonmin Platinum's Karee Mine;
- Mamba Chrome Mine;
- Xstrata Wonderkop;
- Phula mine;
- Samancor; and
- Various other small businesses (light industry, transport operations).

Other Land Uses of Interest

There are also other land uses of interest around the Tharisa mine. These include:

- The Protected Natural Environment of the Magaliesberg (3 km south of the mine). This constitutes: an area with a high aesthetic value due to its mostly intact natural features and its tourism potential;
- Rustenburg Town lies approximately 28 km to the west;
- Hartbeespoort lies approximately 43 km to the south east;
- Sun City lies approximately 60 km to the north of the mine; and
- The Rustmo Solar Plant (Adams Solar PV Project Two (Pty) Ltd) owned by Hulisani Ltd is situated approximately 5 km south west of Tharisa mine.



8.4.4 DESCRIPTION OF SPECIFIC ENVIRONMENTAL FEATURES AND INFRASTRUCTURE ON THE SITE

The environmental features and infrastructure in the project area are described in Section 8.4.1. A summary of the key noticeable features associated with each Proposed Project component are tabulated below.

TABLE 8-8: KEY NOTICEABLE ENVIRONMENTAL FEATURES ASSOCIATE WITH EACH PROPOSED COMPONENT

| Aspect | East OG WRD | West OG WRD |
|---------------|---|---|
| Topography | Altered due to the existing open cast mining related activities at the East Mine. | Disturbed and altered because of the existing mining activities associated with West Mine. |
| Soils | No natural soil forms associated with this WRD as it will be established on backfilled portions of the open pit. | |
| Biodiversity | <ul style="list-style-type: none"> Natural vegetation has already been removed as part of current opencast activities. Very little evidence of natural animal life. High Biodiversity Importance in terms of the Mining and Biodiversity Guideline (DEA et al, 2013). Located in a partially protected IBA. Located in the transitional zone Magaliesberg Biosphere. | <ul style="list-style-type: none"> Intersects the endangered Marikana Thornveld Vegetation Type. Could be associated with the proposed species (Morula Tree) as this is present at the Tharisa Mine. Very little evidence of natural animal life. High Biodiversity Importance in terms of the Mining and Biodiversity Guideline (DEA et al, 2013). Located in Ecological Support Areas 1 and 2 of the North West Biodiversity Section Plan, 2015. Located in a partially protected IBA. Located in the transitional zone of the Magaliesberg Biosphere. |
| Surface water | <ul style="list-style-type: none"> Does not intersect any rivers or streams. Sterkstroom River water used for domestic 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. | <ul style="list-style-type: none"> Does not intersect any rivers or streams. Sterkstroom River water used for domestic 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. |
| Groundwater | Most of the boreholes are used for domestic and agricultural (livestock and irrigation) purposes. | |

| Aspect | East OG WRD | West OG WRD |
|--|--|-------------|
| | | |
| Air quality | <ul style="list-style-type: none"> Dust fallout remain within the required limits; Passive sampling (NO₂ and SO₂) remain within the required limits; and PM₁₀ concentrations are elevated. | |
| Noise | Generally, there are audible noise levels in the area because of traffic, mining and community related activities. | |
| Visual | Visual characteristics of the site have been extensively disturbed by surrounding mining companies and on-site mining, farming and community related activities. | |
| Heritage/cultural and palaeontological | No known sites of heritage/cultural importance. This will be confirmed with specialist input. Paleosensitivity is low. | |
| Land uses | Tharisa mining related activities and isolated vegetation patches in the northern section of West OG WRD. | |

8.4.5 ENVIRONMENT AND CURRENT LAND USE MAP

A map illustrating the key features of the current environment and land use is included in Figure 6 to Figure 22.

8.5 IMPACTS AND RISKS WHICH HAVE INFORMED THE IDENTIFICATION OF EACH ALTERNATIVE

This section provides a list of potential impacts on the biophysical, cultural and social aspects that have been identified in respect of each of the project activities and for each of the reasonable and feasible alternatives identified. As discussed in Section 8.1.1 no alternatives are associated with the Proposed Project and as such this section is not applicable.

8.6 METHODOLOGY USED IN DETERMINING THE SIGNIFICANCE OF ENVIRONMENTAL IMPACTS

The method to be used for the assessment of impacts is set out in the table below. This assessment methodology enables the assessment of environmental impacts including: cumulative impacts, the intensity of impacts (including the nature of impacts and the degree to which impacts may cause irreplaceable loss of resources), the extent of the impacts, the duration and reversibility of impacts, the probability of the impact occurring, and the degree to which the impacts can be mitigated.

TABLE 8-9: SLR IMPACT ASSESSMENT METHODOLOGY

| PART A: DEFINITIONS AND CRITERIA* | | |
|---|------------|--|
| Definition of SIGNIFICANCE | | Significance = consequence x probability |
| Definition of CONSEQUENCE | | Consequence is a function of intensity, spatial extent and duration |
| Criteria for ranking of the INTENSITY of environmental impacts | VH | Severe change, disturbance or degradation. Associated with severe consequences. May result in severe illness, injury or death. Targets, limits and thresholds of concern continually exceeded. Substantial intervention will be required. Vigorous/widespread community mobilization against project can be expected. May result in legal action if impact occurs. |
| | H | Prominent change, disturbance or degradation. Associated with real and substantial consequences. May result in illness or injury. Targets, limits and thresholds of concern regularly exceeded. Will definitely require intervention. Threats of community action. Regular complaints can be expected when the impact takes place. |
| | M | Moderate change, disturbance or discomfort. Associated with real but not substantial consequences. Targets, limits and thresholds of concern may occasionally be exceeded. Likely to require some intervention. Occasional complaints can be expected. |
| | L | Minor (Slight) change, disturbance or nuisance. Associated with minor consequences or deterioration. Targets, limits and thresholds of concern rarely exceeded. Require only minor interventions or clean-up actions. Sporadic complaints could be expected. |
| | VL | Negligible change, disturbance or nuisance. Associated with very minor consequences or deterioration. Targets, limits and thresholds of concern never exceeded. No interventions or clean-up actions required. No complaints anticipated. |
| | VL+ | Negligible change or improvement. Almost no benefits. Change not measurable/will remain in the current range. |
| | L+ | Minor change or improvement. Minor benefits. Change not measurable/will remain in the current range. Few people will experience benefits. |
| | M+ | Moderate change or improvement. Real but not substantial benefits. Will be within or marginally better than the current conditions. Small number of people will experience benefits. |

| | | |
|---|------------|--|
| Criteria for ranking the DURATION of impacts | H+ | Prominent change or improvement. Real and substantial benefits. Will be better than current conditions. Many people will experience benefits. General community support. |
| | VH+ | Substantial, large-scale change or improvement. Considerable and widespread benefit. Will be much better than the current conditions. Favourable publicity and/or widespread support expected. |
| | VL | Very short, always less than a year. Quickly reversible |
| | L | Short-term, occurs for more than 1 but less than 5 years. Reversible over time. |
| | M | Medium-term, 5 to 10 years. |
| Criteria for ranking the EXTENT of impacts | H | Long term, between 10 and 20 years (likely to cease at the end of the operational life of activity). |
| | VH | Very long, permanent, +20 years (Irreversible, Beyond closure). |
| | VL | A part of the site/property. |
| | L | Whole site. |
| | M | Beyond the site boundary, affecting immediate neighbours. |
| | H | Local area, extending far beyond site boundary. |
| | VH | Regional/National |

PART B: DETERMINING CONSEQUENCE

INTENSITY = VL

| | | | | | | | |
|-----------------|-------------|-----------|-----------------|-----------------|-----------------|---------------|---------------|
| DURATION | Very long | VH | Low | Low | Medium | Medium | High |
| | Long term | H | Low | Low | Low | Medium | Medium |
| | Medium term | M | Very Low | Low | Low | Low | Medium |
| | Short term | L | Very low | Very Low | Low | Low | Low |
| | Very short | VL | Very low | Very Low | Very Low | Low | Low |

INTENSITY = L

| | | | | | | | |
|-----------------|-------------|-----------|-----------------|---------------|---------------|---------------|---------------|
| DURATION | Very long | VH | Medium | Medium | Medium | High | High |
| | Long term | H | Low | Medium | Medium | Medium | High |
| | Medium term | M | Low | Low | Medium | Medium | Medium |
| | Short term | L | Low | Low | Low | Medium | Medium |
| | Very short | VL | Very low | Low | Low | Low | Medium |

INTENSITY = M

| | | | | | | | |
|-----------------|-------------|-----------|---------------|---------------|---------------|---------------|------------------|
| DURATION | Very long | VH | Medium | High | High | High | Very High |
| | Long term | H | Medium | Medium | Medium | High | High |
| | Medium term | M | Medium | Medium | Medium | High | High |
| | Short term | L | Low | Medium | Medium | Medium | High |
| | Very short | VL | Low | Low | Low | Medium | Medium |

INTENSITY = H

| | | | | | | | |
|-----------------|-------------|-----------|---------------|---------------|---------------|------------------|------------------|
| DURATION | Very long | VH | High | High | High | Very High | Very High |
| | Long term | H | Medium | High | High | High | Very High |
| | Medium term | M | Medium | Medium | High | High | High |
| | Short term | L | Medium | Medium | Medium | High | High |
| | Very short | VL | Low | Medium | Medium | Medium | High |

INTENSITY = VH

| | | | | | | | |
|-----------------|-----------|-----------|-------------|-------------|------------------|------------------|------------------|
| DURATION | Very long | VH | High | High | Very High | Very High | Very High |
| | Long term | H | High | High | High | Very High | Very High |

| | | | | | | | |
|--|-------------|-----------|--------|--------|--------|------|-----------|
| | Medium term | M | Medium | High | High | High | Very High |
| | Short term | L | Medium | Medium | High | High | High |
| | Very short | VL | Low | Medium | Medium | High | High |

| VL | L | M | H | VH |
|---------------------------------|------------|--|---|-----------------------|
| A part of the site/ property | Whole site | Beyond the site, affecting neighbours | Extending far beyond site but localised | Regional/ National |
| EXTENT | | | | |

| PART C: DETERMINING SIGNIFICANCE | | | | | | | |
|---|-------------------------|-----------|------------|----------|----------|-----------|-----------|
| PROBABILITY (of exposure to impacts) | Definite/ Continuous | VH | Medium | Medium | High | Very High | Very High |
| | Probable | H | Low | Medium | Medium | High | Very High |
| | Possible/ frequent | M | Low | Low | Medium | Medium | High |
| | Conceivable | L | Very Low | Low | Low | Medium | Medium |
| | Unlikely/ improbable | VL | Negligible | Very Low | Low | Low | Medium |
| | | VL | L | M | H | VH | |
| CONSEQUENCE | | | | | | | |

| PART D: INTERPRETATION OF SIGNIFICANCE | |
|--|---|
| Significance | Decision guideline |
| Very High | Potential fatal flaw unless mitigated to lower significance. |
| High | It must have an influence on the decision. Substantial mitigation will be required. |
| Medium | It should have an influence on the decision. Mitigation will be required. |
| Low | Unlikely that it will have a real influence on the decision. Limited mitigation is likely required. |
| Very Low | It will not have an influence on the decision. Does not require any mitigation |
| Negligible | Inconsequential, not requiring any consideration. |

*VH = very high, H = high, M= medium, L= low and VL= very low and + denotes a positive impact.

8.7 POSITIVE AND NEGATIVE IMPACTS OF THE PROPOSED ACTIVITY AND ALTERNATIVES

Potential biophysical, cultural and socio-economic impacts that were identified during the scoping process, in consultation with I&APs, are discussed under environmental component headings in this section. These discussions should be read with the corresponding descriptions of the baseline environment in Section 8.4.1 of the Scoping Report. In accordance with the DMRE report template this section requires a discussion of the potential impacts taking into consideration all project related alternatives (alternatives are not applicable to this project). The potential impacts associated with the project phases (construction, operations, decommissioning and closure) have been identified and described. The section below also references studies/investigations that are required to provide the necessary additional information. **In the absence of specialist studies, the assessment conclusions are conservative. It follows that the assessment provided below is a preliminary assessment which will be refined/changed in the EIA and EMP with specialist input, as appropriate.**

8.7.1 POTENTIAL BIOPHYSICAL IMPACTS

8.7.1.1 Issue: Loss of soil and land capability through physical disturbance

PROJECT PHASES IN WHICH IMPACT COULD OCCUR

| Construction | Operational | Decommissioning | Closure |
|--------------|-------------|-----------------|---------|
| | | | |

* The crosshatch is the phase in which the impact is likely to occur.

DISCUSSION

Topsoil is a resource of high value as it is a non-renewable growth medium containing a gene bank of vegetation seeds and other organisms. Soil resources can be lost through physical disturbance such as removal, erosion and compaction which can result in a loss of soil functionality as an ecological driver.

The Proposed Project area associated with West OG WRD (approximately 109 ha (108 ha within a disturbed area)) and East OG WRD, will be established over back filled portions of the West and East pits. It follows that no natural soil resources are associated with these Proposed Project areas.

A section of the proposed West OG WRD (approximately 1 ha) will be located on undisturbed mining areas. This Proposed Project footprint has the potential to further compromise soil resources through an increased WRD footprint area. This could contribute cumulatively to existing impacts from the Tharisa Mine infrastructure and activities. The conservation of topsoil, sound soil management practises and focused use during rehabilitation are critically important in achieving a post-closure land use.

In the absence of soil conservation and management measures and a rehabilitation plan that supports the post closure land use, the intensity of the potential impact associated with the project is expected to be medium. Without mitigation the loss of soil and related land capability would definitely occur and would extend beyond the life of the mine but would be localised to the Tharisa Mine area. The unmitigated significance scenario is expected to be **medium**. This impact significance could be reduced to **low** with the implementation of mitigation measures focused on minimising impacts during operations and remedying any negative impacts at closure.

The additional work required to address this issue is described in Section 9.4 of this Scoping Report.

8.7.1.2 Issue: Loss of soil and land capability through contamination

PROJECT PHASES IN WHICH IMPACT COULD OCCUR

| Construction | Operational | Decommissioning | Closure |
|--------------|-------------|-----------------|---------|
| | | | |

DISCUSSION

Soil is a valuable resource that supports a variety of ecological functions. Mining projects in general have the potential to damage soil resources through contamination. A loss of soil resources would result in a decrease in the natural rehabilitation and future land use potential of land.

Existing mining infrastructure and activities at the Tharisa Mine present numerous sources of contamination. The Proposed Project will likely present additional contamination sources in all phases that have the potential to contaminate soil resources. These likely contaminants could include run-off from exposed surfaces, accidental spills of hydrocarbons and run-off from the side slopes of the WRD's. Although these likely contamination sources do not differ from those already present at the Tharisa Mine, additional contamination sources could contribute cumulatively to existing impacts from the Tharisa Mine infrastructure and activities.

In the absence of pollution containment and spill management measures the intensity of the potential impact is expected to be medium. Without mitigation the loss of soil and related land capability through contamination would definitely occur and would extend beyond the life of the mine but would be localised to the Tharisa Mine area. The unmitigated significance scenario is expected to be **medium**. In the mitigated scenario that focuses on avoiding impacts through containment of potential contamination at source and implementation of spill management procedures, the significance could be reduced to **low**.

The additional work required to address this issue is described in Section 9.4 of this Scoping Report.

8.7.1.3 Issue: Physical destruction of biodiversity

PROJECT PHASES IN WHICH IMPACT COULD OCCUR

| Construction | Operational | Decommissioning | Closure |
|--------------|-------------|-----------------|---------|
| | | | |

DISCUSSION

The placement of mining infrastructure and activities in all phases has the potential to destroy biodiversity through the physical destruction of specific biodiversity areas, of linkages between biodiversity areas and related species which are considered to be significant because of their status, and/or the role that they play in the ecosystem.

Existing infrastructure and activities associated with the Tharisa Mine have already contributed to the loss of biodiversity. The Proposed Project area associated with East OG WRD and West OG WRD (approximately 109 ha (108 ha within a disturbed area)), will be established over backfilled portions of the East Pit and within disturbed areas. It follows that the natural vegetation within these areas has already been removed as part of current opencast activities.

The Proposed Project will require the disturbance of additional vegetation (approximately 1 ha on undisturbed mining area) specifically associated with West OG WRD, which could contribute cumulatively to the existing impacts. This is of relevance when considering that this project footprint is located in the endangered Marikana Thornveld, which has already been extensively disturbed by existing operations and surrounding mining, community and farming activities. The protected Marula Tree is known to occur at the Tharisa Mine, and as follows could be disturbed if located within the footprints of West OG WRD. Further to this, when considering national and provincial site sensitivity databases, the Proposed Project area falls within areas of biodiversity important in terms of the Mining Biodiversity Guidelines, North West Biodiversity Sector Plan, 2015, IBA's and the Magaliesberg Biosphere.

In the absence of mitigation and a rehabilitation plan that supports the post closure land use, the intensity of potential impacts is expected to be medium. In the unmitigated scenario the probability of the impact occurring is definite given that biodiversity processes are not confined to the mine, the potential impact will extend beyond the boundary of the mine and would extend beyond the life of mine. The unmitigated significance is expected to be **medium**. If the correct mitigation measures are put in place, some of the destruction could be minimised and where such destruction has occurred, rehabilitation (particularly at closure) could establish a functional ecosystem. This reduces the impact significance to **low**.

The additional work required to address this issue is described in Section 9.4 of this Scoping Report.

8.7.1.4 Issue: General disturbance of biodiversity

PROJECT PHASES IN WHICH IMPACT COULD OCCUR

| Construction | Operational | Decommissioning | Closure |
|--------------|-------------|-----------------|---------|
| | | | |

DISCUSSION

There are a number of activities/infrastructures that have the potential to directly disturb vegetation, vertebrates and invertebrates in all project phases, particularly in the unmitigated scenario. With reference to Section 8.4.1.5, there is little evidence of undisturbed vegetation and vertebrates and invertebrates as a result of existing Tharisa mining activities and infrastructure. The Proposed Project presents additional sources of disturbance that could contribute cumulatively to the existing impacts. Potential additional sources (albeit not different from those on site) of disturbances may include excessive dust fallout from various dust sources, noise and vibration pollution and an increase in pollution emissions which may have adverse effects on the growth of some vegetation and indirectly impact on the survival of individual plants, vertebrates and invertebrates.

In the absence of mitigation focussed on preventing or mitigating the impact to acceptable levels, the intensity of the potential impact is expected to be medium. In the unmitigated scenario, the probability of the impact occurring is definite and given that biodiversity processes are not confined to the mine, the potential impact will extend beyond the boundary of the mine for the duration of the project. The unmitigated significance of this potential impact is expected to be **medium** and can be reduced to **low** as most of the disturbances can be controlled through implementation and enforcement of practices, policies and procedures.

The additional work required to address this issue is described in Section 9.4 of this Scoping Report.

8.7.1.5 Issue: Contamination of surface water resources affecting third party use

PROJECT PHASES IN WHICH IMPACT COULD OCCUR

| Construction | Operational | Decommissioning | Closure |
|--------------|-------------|-----------------|---------|
| | | | |

DISCUSSION

There are a number of pollution sources that have the potential to pollute surface water, particularly in the unmitigated scenario.

Existing mining infrastructure and activities at the Tharisa Mine present numerous sources of contamination. The Proposed Project will present additional likely contamination sources in all phases that have the potential to contaminate surface water resources. These likely contaminants could include run-off from exposed surfaces, accidental spills of hydrocarbons and run-off from the side slopes of the WRD's. Although these likely contamination sources do not differ from those already present at the Tharisa Mine, additional contamination sources could contribute cumulatively to existing impacts from the Tharisa Mine infrastructure and activities.

In the absence of pollution containment measures the intensity of the potential impact is expected to be high. The East OG WRD is approximately 260 m from the Sterkstroom, the West OG WRD is approximately 267 m South from tributaries of the Brakspuit. Elevated concentrations of Aluminium have also been noted in the Sterkstroom River. It follows that without mitigation the contamination of surface water resources would probably occur for periods longer than the life of the project and would extend beyond the Tharisa Mine area to the nearby communities that utilise water from domestic and irrigation purposes. The unmitigated significance scenario is expected to be **high**. In the mitigated scenario that focuses on avoiding impacts through containment of potential contamination at source, the significance could be reduced to **low**.

The additional work required to verify the above is described in Section 9.4 of this Scoping Report.

8.7.1.6 Issue: Alteration of natural drainage patterns affecting flow of water in downstream systems

PROJECT PHASES IN WHICH IMPACT COULD OCCUR

| Construction | Operational | Decommissioning | Closure |
|--------------|-------------|-----------------|---------|
| | | | |

DISCUSSION

Natural drainage across the Tharisa Mine is via sheet flow. Rainfall and surface water run-off will be collected in areas that have been designed with water containment infrastructure. The collected rainfall and run-off will therefore be lost to the catchment and can result in the alteration of drainage patterns.

Existing Tharisa mining infrastructure has already altered the natural drainage patterns by reducing the volume of run-off into the downstream catchments through existing stormwater management infrastructure on site. Rainfall and surface water run-off will be collected in a series of toe paddocks and secondary toe paddocks around the perimeter of the WRD's that will be designed to contain dirty water.

In the absence of mitigation, the intensity of unmitigated impacts is expected to be very low given that monthly average evaporation rates recorded at the Buffelspoort weather station exceed the monthly average rainfall for all months. The duration of any loss of runoff to the catchment would extend post-closure in the absence of rehabilitation and the extent is expected to impact downstream areas beyond Tharisa mine. The probability of substantial runoff reduction to downstream systems in the unmitigated case is however expected to be unlikely. The unmitigated significance of this impact is therefore expected to be **very low**. In the mitigated scenario, with

the focus on rehabilitation of restoration of natural drainage lines (particularly at closure), the significance of the impact could be **insignificant**.

The additional work required to address this issue is described in Section 9.4 of this Scoping Report.

8.7.1.7 Issue: Contamination of groundwater affecting third party use

PROJECT PHASES IN WHICH IMPACT COULD OCCUR

| Construction | Operational | Decommissioning | Closure |
|--------------|-------------|-----------------|---------|
| | | | |

DISCUSSION

There are a number of pollution sources that have the potential to pollute groundwater, particularly in the unmitigated scenario.

Existing mining infrastructure and activities at the Tharisa Mine present numerous sources of groundwater contamination. The Proposed Project will present additional likely contamination sources in all phases that have the potential to contaminate groundwater resources. Possible sources of groundwater contamination associated with the Proposed Project include seepage from accidental spills and leaks, and seepage from the WRD's. Although these likely contamination sources do not differ from those already present at the Tharisa Mine, additional contamination sources could contribute cumulatively to existing impacts from the Tharisa Mine infrastructure and activities.

In the absence of mitigation, the intensity of unmitigated impacts is expected to be high. With reference to Section 8.4.1.7, exceedances of the IWUL groundwater quality guideline limits for drinking water and the TWQGR for irrigation and livestock watering purposes have been noted at monitoring point at the mine. It follows that without mitigation the contamination of groundwater resources would probably occur for periods longer than the life of the project and could extend beyond the Tharisa Mine area to the nearby communities that utilise water for domestic and irrigation purposes. The unmitigated significance scenario is expected to be **high**. With appropriate design and mitigation aimed at providing an alternative supply (if Tharisa's operations are a result of loss of water for third party use), the mitigated significance could be reduced to **low**.

The additional work required to address this issue is described in Section 9.4 of this Scoping Report.

8.7.1.8 Issue: Increase in ambient air concentrations

PROJECT PHASES IN WHICH IMPACT COULD OCCUR

| Construction | Operational | Decommissioning | Closure |
|--------------|-------------|-----------------|---------|
| | | | |

DISCUSSION

Mining projects in general have the potential to contribute to an increase in ambient emissions during all phases.

The Tharisa Mine is located in an area where the ambient air quality has already been influenced by existing Tharisa activities and infrastructure and surrounding community, farming and mining activities. The Proposed Project does not present emission sources that differ from those already present at the Tharisa Mine. However, additional emission sources could contribute cumulatively to the existing impacts from the Tharisa Mine infrastructure and activities, which in turn could influence potential sensitive receptors. In this regard, the increase in materials handling particularly with the movement and tipping of waste rock material could result in an increase in particulate emissions. Other emission sources include land clearing activities for construction, wind erosion of disturbed areas, vehicle movement along unpaved roads and exhaust emissions. Certain of the materials are particularly fine, thereby having a higher risk of potential health impacts to third party receptors if airborne. The main contaminants of concern, as a result of the project, include particulate matter (PM) and dust fallout. The potential sensitive receptors near the Proposed Project areas includes the Mmadithlokwa, Bokamoso and Lapologang communities, Piet Retief Primary school and farmers.

In the absence of mitigation measures that focus on the control of emissions at source and a rehabilitation plan that allows for vegetating surfaces, the intensity is expected to be high given the close proximity of the proposed West OG WRD to the Mmadithlokwa, Bokamoso and Lapologang communities, Piet Retief Primary schools and farmers. Where third parties are exposed to project-related emissions, without mitigation, there could be related health and nuisance impacts. It follows that the probability of the impact occurring is definite in the unmitigated scenario and would extend beyond the site boundary and would occur for the life of the project. Without mitigation the significance of the impact is expected to be **high**. With mitigation that focuses on minimising impacts through the application of control measures, the significance could be reduced to **medium**.

The additional work required to address this issue is described in Section 9.4 of this Scoping Report.

8.7.1.9 Issue: Increase in disturbing noise levels affecting potential human receptors

PROJECT PHASES IN WHICH IMPACT COULD OCCUR

| Construction | Operational | Decommissioning | Closure |
|--------------|-------------|-----------------|----------------|
| | | | NOT APPLICABLE |

DISCUSSION

Mining projects in general have the potential to contribute to an increase in ambient noise levels during all phases prior to closure.

The 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 D1325 (Marikana Road) that runs between the East and West mining areas at the Tharisa Mine. Noise sources associated with the Proposed Project, particularly during the operational phase, include the movement of machinery and equipment as part of ongoing handling of the waste rock material. The Proposed Project does not present noise sources that differ from those already present at the Tharisa Mine. However, additional sources of noise could contribute cumulatively to the existing impacts from the Tharisa Mine infrastructure and activities, which in turn could influence potential sensitive receptors. The

potential noise sensitive receptors near the Proposed Project areas includes the Mmadilthlokwa, Bokamoso and Lapologang communities, Piet Retief Primary school and farmers.

In the absence of mitigation measures that consider potential receptor sites in relation to project activities the intensity is expected to be high given the close proximity of the Proposed Project to the Mmadilthlokwa, Bokamoso and Lapologang communities, Piet Retief Primary school and farmers. It follows that the probability of the impact occurring is definite in the unmitigated scenario and would extend beyond the site boundary and would occur until decommissioning is complete. Without mitigation the significance of the impact is expected to be **high**. With mitigation that focuses on minimising impacts through the application of noise control measures, the significance could be reduced to **medium**.

The additional work required to address this issue is described in Section 9.4 of this Scoping Report.

8.7.2 POTENTIAL CULTURAL IMPACTS

8.7.2.1 Issue: Loss or damage to heritage and/or paleontological resources

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 SAHRIS indicates the palaeosensitivity within the project area as “grey” denoting an insignificant / zero palaeosensitivity. The discussion below therefore only focusses on the heritage resources.

PROJECT PHASES IN WHICH IMPACT COULD OCCUR

| Construction | Operational | Decommissioning | Closure |
|--------------|-------------|-----------------|---------|
| | | | |

DISCUSSION

The placement of infrastructure and mining activities in general, in all phases, have the potential to remove, damage or destroy heritage/cultural resources, either directly or indirectly, and result in the loss of the resource for future generations.

With reference to Section 8.4.2.1, numerous heritage resources have been identified at the Tharisa Mine. These 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. It is unlikely that any heritage resources would be associated with the proposed East OG WRD and the West OG WRD (approximately 108 ha). This is mainly because the WRD's are located over backfilled portions of the open pit and disturbed areas.

In the absence of site-specific information (informed by specialist input), any loss of heritage resources is considered to be a high intensity. Given that the Tharisa Mine is located in an area known for rich and diverse heritage resources including the presence of existing resources at the mine, it is probable that heritage sites are associated with the north section of the proposed West OG WRD (approximately 1 ha). Any loss or damage of these resources is long term and will extend into the affected communities. The unmitigated significance is rated

high and can be reduced to **low** with mitigation aimed at the avoidance and/or relocation of heritage sites (if required).

The additional work required to confirm the above is described in Section 9.4 of this Scoping Report.

8.7.3 POTENTIAL SOCIO-ECONOMIC IMPACTS

8.7.3.1 Issue: Disturbance to third party road users by project related traffic

PROJECT PHASES IN WHICH IMPACT COULD OCCUR

| Construction | Operational | Decommissioning | Closure |
|--------------|-------------|-----------------|----------------|
| | | | NOT APPLICABLE |

DISCUSSION

The key potential traffic related impacts are on road capacity and public safety when additional traffic is added to the existing transport network.

The Proposed Project will not generate additional traffic and as such the intensity of the impact in the unmitigated scenario is expected to be very low as no noticeable change in existing traffic volumes are anticipated. It follows that the probability of any project-related road disturbance and traffic safety impacts are unlikely to occur even in the unmitigated scenario. This significance of this impact is therefore rated as being **insignificant** in both the unmitigated and mitigated scenarios.

As no substantial traffic related impacts are anticipated, additional work is not proposed in order for this to be assessed qualitatively by SLR (section 9.3).

8.7.3.2 Issue: Alteration of the visual environment affecting sense of place

PROJECT PHASES IN WHICH IMPACT COULD OCCUR

| Construction | Operational | Decommissioning | Closure |
|--------------|-------------|-----------------|---------|
| | | | |

DISCUSSION

Mining related activities and infrastructure have the potential to alter the visual environment and aesthetics of an area. Visual/aesthetic value is the emotional response derived from the experience of the environment with its natural attributes.

Existing mining infrastructure and activities, private farming activities, community related activities and surrounding mines to the north, east and west of the Tharisa Mine have already influenced the natural visual sense of place. The establishment of additional WRD's will present additional facilities that could contribute cumulatively to existing impacts from the Tharisa Mine infrastructure.

In the absence of mitigation measures that provide for rehabilitation, the intensity in the unmitigated scenario is expected to be high. 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. It follows that the potential impact would extend beyond the project area boundary to the visual receptors and would continue post-closure. The probability of the impact occurring in the unmitigated scenario is expected to be probably, but also needs to be considered in the context that the Proposed Project would merge with the existing facilities and is not expected to stand out. The unmitigated significance is therefore expected to be **high** and can be reduced to **low** with mitigation focussed on rehabilitation.

The additional work required to address this issue is described in Section 9.4 of this Scoping Report.

8.7.3.3 Issue: Positive and negative socio-economic impact

PROJECT PHASES IN WHICH IMPACT COULD OCCUR

| Construction | Operational | Decommissioning | Closure |
|--------------|-------------|-----------------|---------|
| | | | |

DISCUSSION

Mining projects tend to bring with them an expectation of employment in all project phases prior to closure. This expectation can lead to the influx of job seekers to an area which in turn increases pressure on existing communities, housing, basic service delivery and raises concerns around safety and security. In addition to this, mining has a positive economic impact on the national, local and regional economy. Direct benefits are derived from wages, taxes and profits. Indirect benefits are derived through the procurement of goods and services, and the increased spending power of employees.

The Proposed Project forms part of existing approved operations and as such the development of the Proposed Project will not generate any additional employment opportunities. However, in the absence of the additional storage, the mine will have difficulties continuing mining operations which could lead to negative socio-economic impacts. In this regard, the Proposed Project is required to provide additional capacity to store waste rock to allow for the optimisation of mining. It follows that negative project-related socio-economic impacts including inward migration are not expected to occur and the economic benefits associated with mining have previously been accounted for. This significance of this impact is therefore rated as being **insignificant** in both the unmitigated and mitigated scenarios.

The “no-go” option would not allow for the optimisation of the current mining operations and could potentially result in significant negative socio-economic impacts (i.e. the closure of the mine would result in the cessation of current employment).

As no substantial related impacts are anticipated, additional work is not proposed in order for this to be assessed qualitatively by SLR (section 9.3).

8.7.3.4 Issue: Hazardous excavations and infrastructure that pose a safety risk to third parties and animals

PROJECT PHASES IN WHICH IMPACT COULD OCCUR

| Construction | Operational | Decommissioning | Closure |
|--------------|-------------|-----------------|---------|
| | | | |

DISCUSSION

Hazardous excavations and infrastructure include all structures into, or off which third parties and animals can fall and be harmed.

Existing mining infrastructure and activities at the Tharisa Mine present hazardous infrastructure and excavations that can be harmful to both people and animals, particularly when considering that communities such as Lapologang and Maditlhokwa are located within the Mining Right area. The Proposed Project presents additional infrastructure that has the potential to further alter the natural topography and in turn present additional hazardous excavations and infrastructure. The Proposed Project could therefore contribute cumulatively to existing impacts from the Tharisa Mine infrastructure and activities.

In the absence of management measures that focus on access control, the intensity of the potential impact is high. Any loss or injury is considered long term and can extend beyond the mine boundary to the communities to which the injured people and/or animals belong. The likelihood of occurrence, in the absence of management measures, is likely given that Maditlhokwa is directly adjacent to the proposed West OG WRD. The unmitigated scenario is expected to be **high**. In the mitigated scenario with a focus on access-controlled site, the significance of the potential impact could reduce to **low**.

This impact will be assessed qualitatively by SLR (Section 9.3 of this Scoping Report).

8.7.3.5 Issue: Sterilisation of a mineral resource

PROJECT PHASES IN WHICH IMPACT COULD OCCUR

| Construction | Operational | Decommissioning | Closure |
|--------------|-------------|-----------------|---------|
| | | | |

DISCUSSION

Mineral resources can be sterilized and/or lost through the deposition of minerals onto waste disposal facilities such as the proposed WRD's. The intensity of sterilising mineral resources is considered to be high because of the associated potential economic value that is lost when sterilisation occurs. If sterilisation of resources occurs, it is likely that the related impact will extend beyond the life of mine and will extend beyond the site boundary if one considers the economic nature of the impact.

Without mitigation the probability is definite, and the associated significance is **high**. In the mitigated scenario, with planning and co-ordination to prevent the unacceptable sterilisation of resources the impact can be reduced to **low**.

The additional work required to address these issues are described in Section 9.3 of this Scoping Report.

8.7.3.6 Issue: Change in current land use

PROJECT PHASES IN WHICH IMPACT COULD OCCUR

| Construction | Operational | Decommissioning | Closure |
|--------------|-------------|-----------------|---------|
| | | | |

DISCUSSION

Land use impacts on the receiving environment may be caused by activities and infrastructure directly displacing current land uses, as well as by project activities rendering adjacent land use less viable or attractive. Land use within the Proposed Project footprint is characterised by mining related activities and isolated vegetation patches, therefore, the Proposed Project will not result in significant changes to the current land use.

Adjacent land use comprises mining and agriculture. The project activities would not affect adjacent mining activities. Agriculture on adjacent farms comprises wilderness and livestock grazing at low densities. Aspects such as increased noise and dust could reduce the palatability of veld and thus reduce stocking densities. Further reduction in groundwater levels, or contamination, could limit water abstraction and further constrain land use.

The additional work required to address these issues (noise, dust and groundwater) are described in Section 9.3 of this Scoping Report.

8.8 POSSIBLE MITIGATION MEASURES THAT COULD BE APPLIED AND THE LEVEL OF RISK

A preliminary list of the impacts identified by the EAP or raised by I&APs, as well as the possible management and mitigation measures is provided in Table 8-10 below. The level of residual risk after management or mitigation is also estimated. This will be refined during the EIA phase with specialist input as appropriate.

TABLE 8-10: POSSIBLE MANAGEMENT ACTIONS AND THE ANTICIPATED LEVEL OF RISK

| Activity | Potential impact | Potential mitigation type | Potential for residual risk |
|---|---|---|--|
| Extension of a previously approved WRD (West OG WRD). | Potential biophysical impacts: <ul style="list-style-type: none"> Loss of soil resources and land capability through physical disturbance. Loss of soil resources and land capability through contamination. Physical destruction of biodiversity. General disturbance of biodiversity. Alteration of natural drainage patterns affecting flow of water in downstream systems. Contamination of surface water resources affecting third party supply. Contamination of groundwater affecting third party supply. Increase in ambient noise levels. Increase in disturbing noise levels affecting potential human receptors. Generation of negative visual views. | <ul style="list-style-type: none"> Continued implementation of best mining practices to avoid the unnecessary sterilisation of mineral resources. Continued use of access control. Continued implementation and where relevant the adaptation of the soil conservation management plan and waste management plan. Continued implementation and where relevant the adaptation of biodiversity controls and management plan, which includes the control of alien invasive species and obtaining tree removal permits. Appropriate design and development of stormwater controls for the separation of clean and dirty water systems and obtaining relevant water use licences. Continued implementation and where relevant the adaptation of surface water and groundwater monitoring programmes. Continued implementation and where relevant the adaptation of the air quality monitoring programme. Continued implementation and where relevant the adaptation of the noise monitoring programme. Avoidance of heritage/cultural resources. Continued implementation and where relevant the adaptation of visual control. Continued implementation of employment and procurement policies. | <ul style="list-style-type: none"> Potential residual groundwater contamination risk associated with seepage of chemicals of concern from the Proposed Project. |
| Establishing waste rock over backfilled portions of the East Pit (East OG WRD and West OG WRD). | Potential cultural impacts: <ul style="list-style-type: none"> Loss or damage to heritage and/or paleontological resources. Potential socio-economic impacts: | | |

| Activity | Potential impact | Potential mitigation type | Potential for residual risk |
|----------|--|--|-----------------------------|
| | <ul style="list-style-type: none"> • Sterilisation of mineral resources. • Positive socio-economic impact. • Negative socio-economic impact. • Hazardous excavations and infrastructure that pose a safety risk to third parties and animals. • Disturbance to third party road users by project related traffic. • Change in sense of place. • Change in land use. | <ul style="list-style-type: none"> • Implementation of an emergency response procedure. • Rehabilitation in line with current practices. | |

8.9 OUTCOME OF THE SITE SELECTION MATRIX

This section is not applicable as no alternatives are being considered for the Proposed Project.

8.10 MOTIVATION WHERE NO ALTERNATIVE SITES WERE CONSIDERED

This section is not applicable as no alternatives are being considered for the Proposed Project.

8.11 THE PREFERRED ALTERNATIVE

This section is not applicable as no alternatives are being considered for the Proposed Project.

9 PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESSMENT

This Section describes the nature and extent of further investigations to be conducted by SLR in the EIA phase and sets out the proposed approach to the EIA phase.

9.1 EIA OBJECTIVES

The main objectives of the EIA phase will be to:

- Assess the potential biophysical, cultural and socio-economic impacts of the Proposed Project;
- Liaise with I&APs on issues relating to the Proposed Project to ensure compliance with existing guidelines and regulations;
- Identify and describe procedures and measures that will mitigate potential negative impacts and enhance potential positive impacts;
- Undertake consultation with I&APs and provide them with an opportunity to review and comment on the outcomes of the EIA process and acceptability of mitigation measures;
- Develop an EMPr and a conceptual closure/decommissioning plan; and
- Provide measures for ongoing monitoring (including environmental audits) to ensure that the project plan and proposed mitigation measures are implemented as outlined in the detailed EIA.

9.2 ALTERNATIVES TO BE CONSIDERED

The WRD's will be located within the existing Mining Right boundary which is constrained for open space. The Tharisa Mine is also bordered by other mining companies (Western Platinum Mine, Marikana Platinum Mine and Samancor) on the West, North and Eastern boundaries of the Tharisa Mining Right area (refer to Figure 21). The N4 and farming community of Buffelspoort is located to the South of the Tharisa Mine. In addition to this, some of the WRD's will be placed on previously disturbed areas, thereby minimising the project footprint. It follows that no alternative for the location of the proposed additional WRD's have been considered for the Proposed Project.

9.3 ASPECTS TO BE ASSESSED QUALITATIVELY

This section lists the environmental aspects that will be considered and qualitatively assessed by SLR in the EIA phase. These are as follows:

- Topography – hazardous excavations and infrastructure that pose a safety risk to third parties and animals;
- Surface water – alternation of natural drainage patterns and contamination of water resources;
- Traffic - disturbance to third party road users by project related traffic;
- Socio-economic – positive and negative impacts; and
- Sterilisation of mineral resources.

The assessment of these aspects, and the determination of detailed management and mitigation measures will be undertaken by SLR and provided in the EIA report.

9.4 ASPECTS TO BE ASSESSED BY SPECIALISTS

The aspects to be assessed by the various specialists are included in Table 9-1. This lists specialist studies has been identified on the basis of SLR's knowledge of mining related projects and through the results of the Department of Forestry, Fisheries and the Environment (DFFE) screening tool (see Section 10.1) and input from I&APs. Each specialist study will undertake the following steps:

- Define the baseline environment through review of available information from past studies and additional field studies, where required;
- Define relevant laws and regulations that apply to the specific specialist study;
- Identify specific issues of concern through an understanding of the project and the sensitivity of the affected environment as well as review of all issues raised by I&APs;
- Interact with other specialists, where required, to ensure the integration of issues of concern and appropriate assessment;
- Assess the direct, indirect and cumulative impacts;
- Provide mitigation measures to reduce impacts to an acceptable level i.e. residual impact. Where necessary provide recommendations to address residual impacts; and
- Where required, provide detailed monitoring plans.

All specialist studies will be aligned with Appendix 6 (content of specialist studies) of EIA Regulations, 2014 (as amended) or the DFFE protocols (refer to Section 10.1), whichever is relevant. It should be noted that the waste assessment and geochemical characterisation study has already been undertaken by SLR.

TABLE 9-1: PLAN OF STUDY FOR ASPECTS TO BE ASSESSED BY SPECIALISTS

| Specialist Study | | Plan of Study |
|-------------------------|---|--|
| Biophysical environment | Soil, Land Use, Land Capability and Land Potential Study (Terra Africa) | <p>The study will include the following:</p> <ul style="list-style-type: none"> • Results of a desktop review of existing soil and land capability databases, to establish broad baseline conditions and to identify areas of environmental sensitivity and sensitive agricultural areas; • Results of a field survey where soil samples will be collected within the undisturbed Proposed Project area and to classify the dominant soil types according to the South African Soil Classification System (Soil Classification Working Group, 2018); • Results of an alternatives analysis; • Illustrations of the spatial distribution of various soil types and land capability within the project area based on the results of the desktop review and the field survey; • An identification and assessment of potential impacts on the receiving environment as a result of the project activities; and • Mitigation measures identified to manage the potential impacts. |
| | Biodiversity – Terrestrial Study (Scientific Terrestrial Services) | <p>The study will include the following:</p> <ul style="list-style-type: none"> • Results of a desktop review against all relevant biodiversity databases. This desktop review will: <ul style="list-style-type: none"> ○ Provide faunal and floral inventories of species as encountered on site; ○ Determine and describe habitats, communities and ecological state of the project area based on conservation importance and ecological sensitivity; |

| Specialist Study | | Plan of Study |
|-------------------------|--|--|
| Biophysical environment | | <ul style="list-style-type: none"> ○ Identify the likelihood of Red Data Listed (RDL) species as well as SCC to occur within the project area; and ○ Identify and consider all sensitive landscapes and any other ecologically important features, if present. • Results of a field survey that documents the floral and faunal species observed; • Illustrations of the spatial distribution of various habitat types and ecological sensitivity within the Proposed Project area based on the results of the desktop review and the field survey; • An identification and assessment of potential impacts on the receiving environment as a result of the project activities; and • Mitigation measures and monitoring programme identified to manage the potential impacts. |
| | Biodiversity – Aquatic Study (Scientific Aquatic Services) | <p>This study will include:</p> <ul style="list-style-type: none"> • Results of a desktop review against all relevant biodiversity databases; • A site survey to assess and classify the tow valley bottom wetlands. • An identification and assessment of potential impacts on the receiving aquatic environment as a result of the project activities; and • Mitigation measures and monitoring programme identified to manage the potential impacts. |
| | Groundwater Study (Artesium Consulting) | <p>The study will include the following:</p> <ul style="list-style-type: none"> • Results of a baseline and situational analysis of all existing hydrogeological data that will be used to develop the conceptual model for the mine. The conceptual model will provide information pertaining to: <ul style="list-style-type: none"> ○ Aquifer characterisation, recharge and interaction between surface water and groundwater resources; ○ Presence of geological structures; ○ Results of water quality and quantity data informed by the monitoring programme for the mine; and ○ Groundwater use as informed by the monitoring programme. • A groundwater numerical model that will provide information pertaining the contamination plume associated with the Proposed Project; • An identification and assessment of potential impacts on the receiving environment as a result of the project activities; and • Mitigation measures and monitoring programme identified to manage the potential impacts. |
| | Air Quality Study (Airshed Planning Professionals) | <p>The Air Quality Study will include the following:</p> <ul style="list-style-type: none"> • Results of a baseline and situational analysis through the review of available literature, meteorological data and monitoring data for the mine; • An atmospheric source and emissions inventory detailing the source description, source locations, emission rates and the emission factors; • An identification and assessment of potential impacts, using dispersion modelling, on the receiving environment and sensitive receptors as a result of the project activities; and • Mitigation measures and monitoring programme identified to manage the potential impacts. |
| | Noise Study (Airshed Planning Professionals) | <p>The Noise Study will include the following:</p> <ul style="list-style-type: none"> • Results of a baseline and situational analysis through the review of available literature and monitoring data for the mine; • A noise source inventory; |

| Specialist Study | | Plan of Study |
|----------------------|---|--|
| | | <ul style="list-style-type: none"> An identification and assessment of potential impacts, using dispersion and noise propagation simulations, on the receiving environment and sensitive receptors as a result of the project activities; and Mitigation measures and monitoring programme identified to manage the potential impacts. |
| Cultural environment | Heritage Study (CTS Heritage) | <p>The Heritage Study will include the following:</p> <ul style="list-style-type: none"> Results of a baseline and situational analysis through the review of available literature and field surveys; An identification and assessment of potential impacts, on heritage resources (if present) as a result of the project activities; and Mitigation measures identified to manage the potential impacts. |
| | Palaeontology Desktop Study (Marion Bamford) | <p>The Palaeontological Desktop Study will include the results of a baseline analysis through the review of available literature and databases.</p> |
| | Visual Study (Graham A Young Landscape Architect) | <p>The Visual Study will include the following:</p> <ul style="list-style-type: none"> Results of a baseline and situational analysis through the review of available literature and field surveys; An identification and assessment of potential impacts, using viewshed analysis, on the receiving environment and sensitive receptors as a result of the project activities; and Mitigation measures identified to manage the potential impacts. |
| Rehabilitation | Financial Provision (SLR) | <p>The Financial Provision Study will include the following:</p> <ul style="list-style-type: none"> An updated closure plan which will include: <ul style="list-style-type: none"> The closure strategy, closure objectives and mechanisms, design principals and motivations for achieving the closure objective; An environmental risk assessment; An assessment of any long-term latent impacts and mitigation strategies (to be informed by specialist input); and The planned closure monitoring, auditing, and reporting procedures. Updated quantities and cost estimate associated with the closure activities as per the Financial Provisioning Regulations (GNR. 1147 of 2015, as amended). An updated preliminary annual rehabilitation plan. |

9.5 METHOD OF ASSESSING THE ENVIRONMENTAL ASPECTS INCLUDING ALTERNATIVES

Refer to sections 8.6 and 9.4.

9.6 METHOD OF ASSESSING IMPACT SIGNIFICANCE

Refer to section 8.6.

9.7 CONSULTATION WITH THE COMPETENT AUTHORITY

The EIA and EMP, including comments received during the I&AP review process, will be prepared and submitted to the DMRE for their review and decision making. A site visit and meeting will be held, if requested by the DMRE.

9.8 PUBLIC PARTICIPATION PROCESS IN THE EIA

9.8.1 NOTIFICATION OF INTERESTED AND AFFECTED PARTIES

All registered I&APs included on the project database will be involved in the EIA process of the project. Notifications will be in the form of emails and bulk SMS notifications. The relevant I&APs identified for the project are listed below:

- Competent authority:
 - DMRE- North West Province.
- Commenting authorities:
 - Department of Rural Environment and Agricultural Development;
 - Department of Agriculture, Forestry and Fisheries;
 - North West Parks and Tourism Board;
 - Department of Rural Development and Land Reform – inclusive of the Land Claims Commissioner;
 - Department of Human Settlements, Water and Sanitation;
 - Rustenburg Local Municipality (including the Ward 32 councilor); and
 - Bojanala District Municipality.
- Parastatals:
 - Eskom.
- Non-government organisation:
 - Marikana Eco forum; and
 - Federation of Sustainable Environment:
- Landowners and land users;
- Surrounding communities:
 - Mmaditlhokwa;
 - Lapologang; and
 - Bokamoso; and
- Surrounding mines and industries.

9.8.2 DETAILS OF THE PUBLIC PARTICIPATION PROCESS TO BE FOLLOWED

The table below outlines the details of the public participation process that will be followed during the EIA phase of the project.

TABLE 9-2: DETAILS OF THE PUBLIC PARTICIPATION PROCESS TO BE FOLLOWED DURING THE EIA PHASE

| Task | Description |
|---|---|
| Scoping Report DMRE decision | |
| Notification of DMRE decision of the Scoping Report | All I&APs will be notified via email and SMS notifications of the DMRE's decision of the Scoping Report. Once the Scoping Report is accepted, the EIA phase can be initiated. |
| Review of the EIA and EMP | |
| I&APs review of the EIA and EMP | The EIA and EMP will be made available for public review and comment for a period of 30 calendar days to all I&APs registered on the project database. Non-technical summaries of the EIA and EMP |

| Task | Description |
|---|--|
| | <p>will be made available to all I&APs registered on the project database via email. The EIA and EMPr will also be made available on SLR's data-free website.</p> <p>I&APs will be notified when the EIA and EMPr will be available for public review and comment via a combination SMS notifications, emails and WhatsApp groups.</p> |
| Submission of the EIA and EMPr to the DMRE. | The EIA and EMPr will be updated to include any comments received during the review of the report by I&APs. The updated report will be uploaded onto SAMRAD for consideration by the DMRE. |
| Notify I&APs of the DMRE's decision. | Notify I&APs of the decision taken by DMRE and applicable appeals processes. |

9.8.3 INFORMATION TO BE PROVIDED TO INTERESTED AND AFFECTED PARTIES

During the EIA phase of the project, I&APs will be provided with an opportunity to review the EIA and EMPr. The EIA and EMPr will include the following information:

- Detailed description of the current biophysical, cultural and socio-economic environments;
- Detailed description of the project including information pertaining to the scale, extent and duration of the project activities;
- Details of authorisations required in terms of the MPRDA, NEMA and NEM:WA;
- Responses to issues and comments received from I&APs;
- Copies of the specialist reports undertaken for the Proposed Project;
- An assessment of the biophysical, cultural and socio-economic impacts identified during the EIA process, with input from I&APs and specialists; and
- An EMPr, with detailed management measures and mitigation to reduce and control identified impacts.

A Non-Technical Summary of the EIA and EMPr will also be prepared and provided to I&APs in English, Afrikaans and Setswana. The Non-Technical summary will include extracts from the EIA and EMPr. These extracts will include the executive summary of the EIA and EMPr and the summary of the issues and comments raised by I&APs.

Once the DMRE has issued a decision on the application, SLR will inform registered I&APs of the decision and the opportunity for appeal.

9.9 TASKS TO BE UNDERTAKEN DURING THE EIA PHASE

A description of the tasks that will be undertaken during the EIA phase is provided in Table 9-3 below. A preliminary schedule for the EIA phase that aligns with regulatory timeframes is also included.

TABLE 9-3: EIA TASKS AND TIMING

| Phase | EAP activity | Opportunities for Public Participation | | Schedule |
|----------------------------------|---|--|---|-------------------------------|
| | | Competent Authority | I&AP's | |
| Specialist Assessments and Input | EAP to manage specialist activities and receive inputs for EIA and EMPr. | - | - | May to July 2022. |
| | Specialists to be kept informed of issues raised by I&APs throughout the EIA process. | - | - | |
| EIA Phase | Assess environmental impacts and compile EIA and EMPr. | - | - | June – July 2022 |
| | Provide EIA report to I&APs and authorities for review. | Review of EIA and EMPr (30 days). | Review of EIA and EMPr (30 days). | July- August 2022 |
| | Collate and respond to comments and finalise EIA Report | - | - | August-September 2022 |
| Competent Authority review | EIA and EMPr submitted to the DMRE for decision making purposes (106 days from acceptance of Scoping Report). | DMRE to acknowledge receipt of EIA and EMPr (10 days). | - | September 2022- January 2023. |
| | | DMRE review (107 days). | | |
| | | Environmental Authorisation Granted / Refused. | | |
| Decision | Notifications to I&AP's regarding environmental authorisation (granted or refused). | - | I&APs notifications within 14 days of receipt of DMRE decision. | January 2023. |

9.10 MEASURES TO AVOID, REVERSE, MITIGATE, OR MANAGE IDENTIFIED IMPACTS

See Table 8-10 in Section 8.8. It should be noted that this table has been compiled with the information currently in hand and will be refined during the EIA phase.

10 OTHER INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

10.1 DFFE SCREENING TOOL

As of 4 October 2019, it is compulsory to use the DFFE online screening tool. The report generated by the DFFE screening tool was attached to the NEMA Environmental Authorisation application. The screening tool report outlines specialist studies that need to be considered as part of the Proposed Project. In this regard, the table below outlines the specialist studies identified in the screening tool report along with an explanation pertaining to the applicability of these specialist studies in relation to the project.

TABLE 10-1: DEA SCREENING TOOL RESULTS

| Specialist Study | Sensitivity | Requirements |
|--|--|---|
| Agriculture Study | High Sensitivity | A Soils, Land Capability and Agricultural Study will be undertaken for the Proposed Project. The related terms of reference for this Study is included in Section 9.4. |
| Landscape/visual Study | Not specified in screening tool report | A Visual Study will be undertaken for the project. This study will be informed by site work. |
| Archaeological and Cultural Heritage Study | | A Heritage/Cultural Study will be undertaken for the project. |
| Hydrology Study | | A hydrology Study is not deemed necessary for the Proposed Project. Based on previous work undertaken and existing monitoring data, the current status of the hydrological environment at the Tharisa mine is well understood. Stormwater management infrastructure will however be designed for each of the Proposed Project components. |
| Noise Study | | A Noise Study will be undertaken for the project. |
| Traffic Study | | The Proposed Project is not associated with an increase in traffic volumes and as such this study is not applicable to this project. |
| Socio-economic Study | | The Proposed Project is not anticipated to influence current socio-economic conditions at the mine. It follows that a socio-economic assessment is not deemed applicable for the Proposed Project. |
| Air Quality Study | | An Air Quality Study will be undertaken for the project. |
| Ambient Air Quality Study | | |
| Health Study | | The need for a health assessment associated with the Proposed Project is not deemed necessary at this stage. The need for this study may be reviewed depending on the findings of the Air Quality Study. |
| Palaeontology Study | Medium sensitivity | A desktop Palaeontological Assessment will be undertaken for the project. |
| Plant Species Study | Low sensitivity | A Biodiversity Study (terrestrial and aquatic) will be undertaken for the Proposed Project. This study will be informed by site work. |
| Aquatic Biodiversity Study | Very High sensitivity | |
| Animal Species Study | High sensitivity | |
| Terrestrial Biodiversity Study | Very High sensitivity | |

11 OTHER MATTERS REQUIRED IN TERMS OF SECTIONS 24(4)(A) & (B) OF THE ACT

Not applicable.

12 UNDERTAKING BY THE EAP

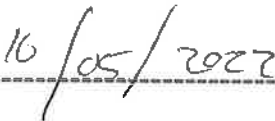
I, Natasha Smyth, the EAP responsible for compiling this report, undertake that:

- The information provided herein is correct;
- The comments and inputs from I&APs have been correctly recorded;
- Information and responses provided to I&APs by the EAP is correct to the best of SLR's knowledge at the time of compiling the report; and
- The level of agreement with I&APs has been correctly recorded and reported.




Natasha Smyth

(Signature of Environmental
Assessment Practitioner)



Date



Greg Brown CA (SA)
Commissioner of Oaths (RSA)
3rd Floor, Block E, The Pivot
Montecasino Blvd, Fourways

16/05/2022

13 REFERENCES

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- Department of Rural, Environment and Agricultural Development. (2015). *North West Biodiversity Sector Plan*.
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- Ltd, G. G. (2019). *Air Quality Impact Assessment, Tharisa Mine Environmental Management Programme Report: Second Amendment*.
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- SLR. (2014). *Environmental Impact Assessment and Management Programme Report for Changes to the pit, tailings dam and waste rock facilities; a chrome sand drying plant and other operational and surface infrastructure changes*.
- SLR. (2019). *Analytical Results for Geochemistry Investigation at Tharisa Mine*.
- SLR. (2019). *Tharisa Mine Waste Rock Assessment Report*.

APPENDIX A: EXISTING AUTHORISATIONS

- A MR (Reference No.: 358 MR) issued by the DME (currently 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 DME (currently the DMRE) on 19 September 2008;
- An EA (Ref No.: NWP/EIA/159/2007) issued by the Northwest DACE (currently the North West DEDECT on 23 October 2009;
- An EA (Ref No.: 14/12/16/3/3/2/408) issued by the Department of Environmental Affairs on 15 November 2012;
- An EA (Ref No.: NWP/EIA/50/2011) issued by the Northwest DACE (currently 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 Department of Mineral Resources (DMR) (currently 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 DMR (currently the DMRE) on 14 Aug 2020 - Waste Water Treatment Plant;
- An addendum to the EIA and EMPr (Ref No.: NW/30/5/1/2/3/2/1/358EM) issued by the DMR (currently the DMRE) on 08 Aug 2021 – Fuel & 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 AUG 2021; and
- An amended IWUL ((Licence No. 03/A21K/ABCGIJ/1468) issued by the DWS in November 2020.

APPENDIX B: EAP QUALIFICATIONS

APPENDIX C: PUBLIC PARTICIPATION RECORD

- DMRE pre-application meeting minutes.
- Copy of the correspondence with the Land Claims Commissioner.
- Copy of the BID in English, Afrikaans and Setswana and proof of distribution.
- Site notice (English, Afrikaans, and Setswana) and photographic evidence of site notices.
- Advertisements placed in the Brits Pos and the Rustenburg Herald.
- Copy of flyers.
- Minutes of focussed and general public meetings.

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