



# RHINO OIL AND GAS EXPLORATION SOUTH AFRICA (PTY) LTD BACKGROUND INFORMATION DOCUMENT

## PROPOSED EXPLORATION WELL DRILLING WITHIN TWO TARGET AREAS WITHIN ER 294, FREE STATE PROVINCE

AUGUST 2022

### 1. INTRODUCTION AND BACKGROUND

In 2019, the (now) Department of Mineral Resources and Energy (DMRE), through the Petroleum Agency of South African (PASA), granted Rhino Oil and Gas Exploration South Africa (ROGESA) an Exploration Right (ER) to explore for petroleum resources in an area in the Free State Province of South Africa (reference 12/3/294 (ER 294)). The ER, which was informed by an Environmental Authorisation (EA), permitted ROGESA to undertake an exploration work programme involving desktop studies and an aerial gradiometry gravity survey.

ROGESA undertook the studies and survey and is now proposing to drill exploration wells within two Target Areas located in the ER. Target Area 1 is located south of Petrus Steyn and Target Area 2 lies south of the R34 between Kroonstad and Edenville (refer to Figure 1). The specific well locations have been proposed by ROGESA based analysis of geological data and will confirmed based on landowner engagement and environmental investigations (the latter will form part of this EIA).

### 2. ENVIRONMENTAL AUTHORISATION PROCESS

Prior to the commencement of the exploration drilling, ROGESA is required to obtain an amendment to ER 294 and approved Environmental Management Programme (EMPr) from the DMRE in terms of Section 102 of the Minerals and Petroleum Resources Development Act, 2002 (MPRDA).

Furthermore, an EA from the DMRE in terms of the National Environmental Management Act (No. 107 of 1998) (NEMA), for activities in Listing Notice 1 (GNR 983 of 2014, as amended) and Listing Notice 2 (GNR 985 of 2014, as amended) is also required. The Environmental Impact Assessment (EIA) Regulations (GNR 982 of 2014, as amended) require that a scoping and EIA process be undertaken to inform an EA decision from the DMRE. Public participation is a key component of the environmental assessment process.

#### PURPOSE OF THIS DOCUMENT

This document has been prepared to inform you about:

- The proposed well drilling project;
- The project alternatives considered;
- The biophysical, cultural, and socio-economic baseline environment of the proposed project area;
- The environmental assessment processes being followed;
- Possible biophysical, cultural, and socio-economic impacts and related specialist input; and
- How you can have input into the environmental assessment process.

#### WHO ARE THE CONSULTANTS?

SLR Consulting South Africa (Pty) Ltd (SLR), an independent firm of environmental consultants, has been appointed by ROGESA to manage the environmental authorisation application process.

#### YOUR ROLE

You have been identified as an interested and affected party (I&AP) who may want to be informed about the proposed project and have input into the environmental authorisation process.

You have an opportunity to review this document and to provide your initial comments to SLR for incorporation in the environmental assessment process. You will also be given the opportunity to review and comment on the Scoping Report and EIA Report and EMPr.

All comments will be recorded and included in the reports submitted for decision-making.

#### MEETING DETAILS

##### STEYNSRUS

Date: Wednesday, 7 September 2022  
Venue: Steynsrus Boerevereniging Hall,  
Van Riebeeck Street, Steynsrus  
Time: 15h00

##### EDENVILLE

Date: Thursday, 8 September 2022  
Venue: Edenville Boerevereniging Hall,  
Mark Street, Edenville  
Time: 09h00

#### HOW TO RESPOND

Responses to this document can be submitted by means of the attached comments sheet and/or through communication with the persons listed below.

#### WHO TO CONTACT?

SLR contact: Theo Wicks/ Gugu Dhlamini  
Tel: 011 467 0945  
WhatsApp: 066 313 7574  
Email: [RhinoER294@slrconsulting.com](mailto:RhinoER294@slrconsulting.com)

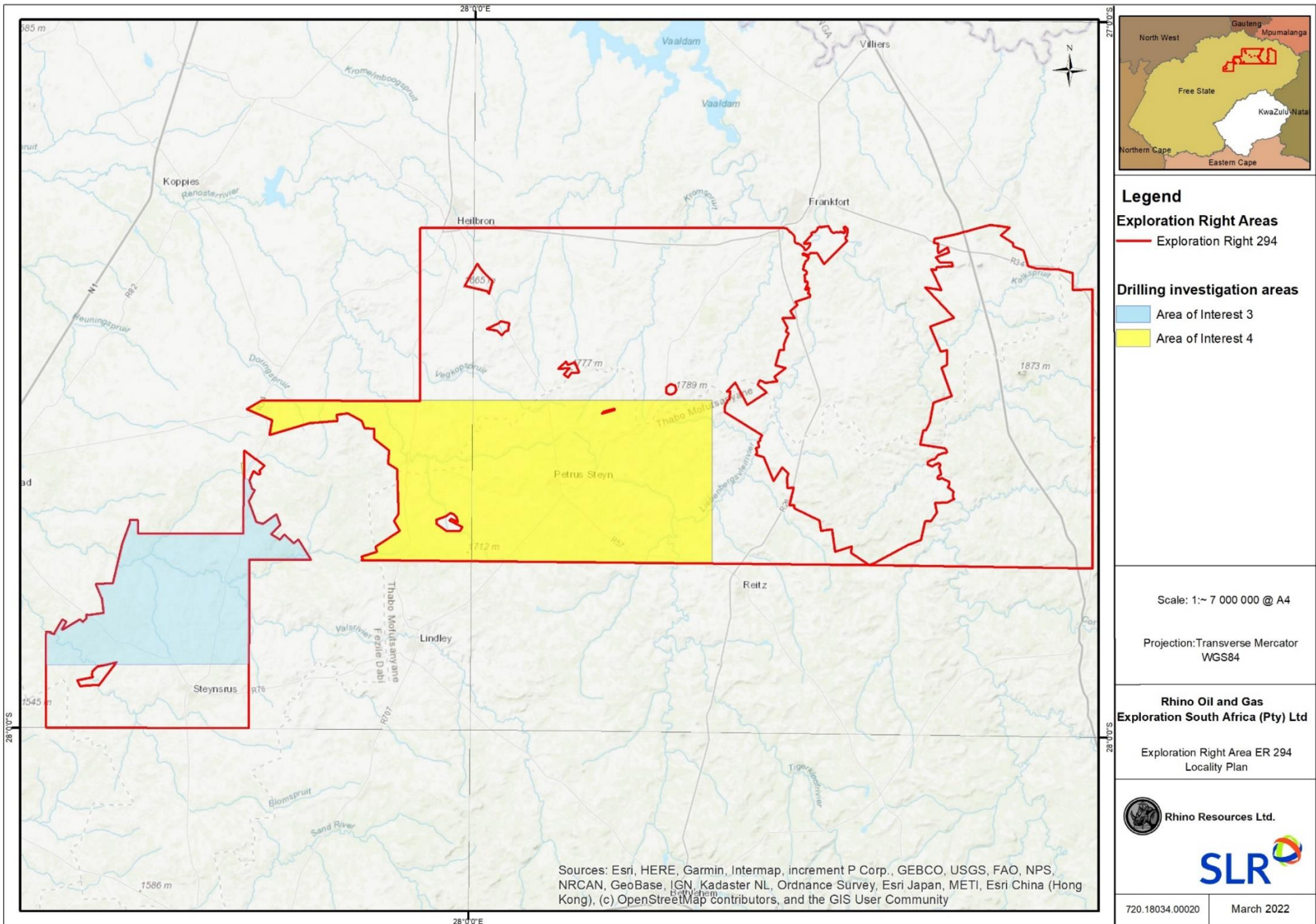


Figure 1: Locality Map (Showing ER boundary and Target Areas)

### 3. OVERVIEW OF THE PROPOSED PROJECT

#### 3.1 APPLICATION

An application for EA will be submitted via PASA in September 2022. Acceptance of the application by PASA will only permit the applicant to continue with the required Scoping and EIA process and does not constitute authorisation. The Scoping and EIA process is subject to the timeframes prescribed in the EIA Regulations 2014 (as amended).

#### 3.2 PROJECT AND PROCESS OVERVIEW

ROGESA is proposing to drill a maximum of 40 exploration wells within the project area. The proposed works programme would consist of the following phases (summarised below):

- Well identification and permitting;
- Mobilisation Phase;
- Drilling Phase;
- Well Execution Phase;
- Test Phase;
- Well abandonment Phase; and
- Demobilisation Phase.

##### Well identification and permitting

The identification and sighting of target well sites will be undertaken based on a combination of:

- Prospective petroleum bearing geologies as determined by analysis of data;
- Areas remaining following an environmental and social screening where sensitive environments (wetlands, watercourses, critical biodiversity areas, culturally significant areas) will be screened out;
- Site assessment by ecology, heritage and geohydrological specialists; and
- Confirmation of an access agreement with landowners.

##### Mobilisation Phase

The drill rig, along with associated mechanical infrastructure (compressors, generator, blow-out protector, water pump and cart, drilling sump, drill rods, waste skips) will be located within a secured drill site camp. Staff will be accommodated offsite (i.e. not at the drill site camp).

##### Drilling Phase

During the drilling phase, different bit sizes are used to drill a series of telescoping holes, from the surface to the total depth of the planned well. The first hole, the outer, is the biggest and called the tophole, while the subsequent inner holes become progressively smaller and smaller as the well depth increases. This continues until the final hole, which is the smallest, reaches the target depth. During the drilling process, drilling fluids such as compressed air or muds are pumped down the inside of the drill pipe and exit at the drill bit to optimise drilling operations.

Once each hole section has been drilled, casing (steel tubulars) is run into the well and cemented in place to

secure/seal the section that has just been drilled and to allow for the drilling of the next (smaller) hole section. The cement operation consists of pumping cement down the drill string to the bottom. The cement then flows, out the bottom of the casing shoe and back up into the space between the cased hole and open hole.

The installed casing and cement is a tested barrier that facilitates the drilling of the next section, allowing to reach the target final depth in the safest way.



Figure 2: Typical core drilling rig

##### Well Execution Phase

Well execution entails:

- Well logging - Each of the wells will be logged to record the lithology and to confirm the quality of the cement casing of the well; and
- Well completion - the wellbore is displaced with an industrial water, necessary to balance the downhole pressure and, at the same time, to complete the removal of mud/solids from the well.

In the case of unsuccessful wells, once a full log of the reservoir section has been undertaken, the well will be plugged and abandoned (see section overleaf).

##### Test Phase

The well test objectives are to:

1. Determine key technical factors of the reservoir (e.g. size, permeability and fluid characteristics) and values for use in future drilling; and
2. Obtain representative data including reservoir pressure, production rates and sample(s).

While testing, recovered hydrocarbons are sent to a flare boom with a burner to ensure as complete combustion of fluids/gases (including hydrocarbons) as possible. To ensure that burning can be done safely from the drill site, a flare pit can be installed in order to prevent the spread of fire.

The flow periods and rates will be limited to the minimum necessary to obtain the required reservoir information during the well test. It is anticipated that a maximum well test time for this project will be approximately 30-days.

##### Well Abandonment Phase

The scope of well abandonment is to protect the environment by effectively sealing off all distinct permeable zones (i.e., the zones of potential hydrocarbons or water inflow penetrated by the well), to ensure that formation fluids are isolated, both within the wellbore and in annular spaces, and that their migration among different formations and/or up to the surface is prevented. For unsuccessful wells, a cement plug setting job will be performed.

At the end of the plug and abandonment operations, the well schematic and wellhead location (including casings dimension, length, cement plug dimension and composition, pressure and inflow test results, etc.) will be included in a final report submitted to PASA.

#### Demobilisation Phase

On completion of drilling, the drill rig, support vehicles and machinery will be removed from the wellsite location and the site will be rehabilitated to a condition acceptable to the landowner.

## 4. PROJECT ALTERNATIVES

**Location:** The Target Areas were identified as the most prospective for the presence of petroleum resource, based on having suitable geological stratum. Areas of higher ecological and social sensitivity will be screened out from consideration. The final sites will be selected based on field work by an ecologist, heritage and geohydrological specialist, as well as agreement with the landowner.

**Technology/Drill rig:** Based on a current understanding of the ground conditions, ROGESA has opted for a truck mounted drilling rig with air and mud drilling capabilities.

## 5. NEED AND DESIRABILITY

Petroleum products remain a vital source of energy. Natural gas comprises mostly methane and can be a relatively clean form of energy. It can be used to generate electricity or provide heat for domestic and industrial purposes. Petroleum is also a key input into many manufacturing processes. Once extracted gas can be easily contained, transported and safely used in many applications. The type of downstream use would entirely dependent on the commercial scale of the resource.

The purpose of the proposed exploration well drilling is to facilitate the determination of whether geological structures ("prospects") contain oil or gas in potentially commercial extractable amounts.

## 6. TIMING

The well drilling and testing programme is planned over a several months. The programme is divided into the well drilling and well testing phases with successful completion of one phase informing the next. Drilling at each site can take 1 to 3 months to complete. Short-duration well tests are planned (approximately 30-days).

## 7. LAND ACCESS

The proposed drilling sites are to be situated on private property and will be accessed, established, managed and rehabilitated with prior consent of the landowner (in terms of a written agreement).

## 8. ENVIRONMENTAL MANAGEMENT

The process of managing the impacts associated with the drilling activities and rehabilitating the disturbed areas will be conducted in terms of the EMPr developed for the project subject to approval by the DMRE.

## 9. FUTURE EXPLORATION OR PRODUCTION

The current application is only to authorise the proposed well drilling work as described above (which will be detailed in the Scoping and EIA Reports). Any further exploration activities or future production would require further approval from the DMRE. Such approvals will be subject to the relevant legal requirements which include further public consultation and environmental assessments.



Figure 3: Example of well drilling operations

## 10. OVERVIEW OF BASELINE ENVIRONMENT

### 10.1 BIOPHYSICAL ENVIRONMENT

Geology: Falls within the Karoo Basin.

Climate: Characterised by summer rainfall, warm to hot summers and cool to cold winters.

Soils and land capability: The project area is largely characterised by structureless and textural contrast soils and soils with undifferentiated clays. Predominately low arable potential with high erosion hazard.

Land cover: The project area comprises grasslands, and a considerable area is characterised by cultivated fields.

Hydrology: Numerous wetlands, small dams and farm dams, which are used for livestock and domestic purposes, are located within the project area. The Vaal Dam traverses Target Area 1 of the project area.

Groundwater: Groundwater use and extraction in the area ranges from extraction of seasonal groundwater from shallow wells to drilling of boreholes for domestic/municipal use and agricultural purposes.

Flora: The project area is located within the Grassland Biome, predominately in the Central Free State, Eastern Free State Clay and Frankfort Highveld Grassland bioregions.

Fauna: Numerous faunal species are associated with the various natural vegetation units located in the project area. Potential species of concern include the *Amblysomus septentrionalis*, *Spizocorys fringillaris* and the *Homoroselaps dorsalis*, amongst others.

Air Quality: The project area's ambient air quality is generally good, with some regions having been influenced by industrial emissions from power stations, chemical and manufacturing industries, mining activities, agricultural activities, road use, biomass burning, domestic fuel burning, and motor vehicle emissions.

### 10.2 CULTURAL ENVIRONMENT

Heritage/Cultural resources: It is expected that the project area's landscape will be scattered with Iron Age stone walling, farmsteads and associated burials, unmarked burials and to a lesser extent with a few Stone Age artefact scatters or open sites.

Palaeontological resources: The project area is predominantly underlain by the Normandien formations of very high fossil sensitivity belonging to the Beaufort Group, Karoo super group. This formation is heavily intruded by igneous dolerite in this area. Fossils common in this formation are fish, amphibians, reptiles, therapsids and vertebrate burrows, Glassopteris tree fossils and insect wings.

### 10.3 SOCIO-ECONOMIC ENVIRONMENT

Socio-economic: In general, the municipal areas extending across the project area are characterised by high levels of illiteracy and unemployment. A large majority of the population live in formal houses/buildings with access to waterborne sanitation and electricity. Access to piped water inside the dwellings however remains a problem.

Land use: The area is predominantly used for commercial agriculture. The agricultural activities include a combination of crop production, animal production, horticulture, dairy farming, game farming, aquaculture, fruit production and agro-processing.

## 11. SPECIALIST STUDIES TO INFORM THE ENVIRONMENTAL AUTHORISATION PROCESS

The following specialist assessments will be undertaken as part of the EIA process:

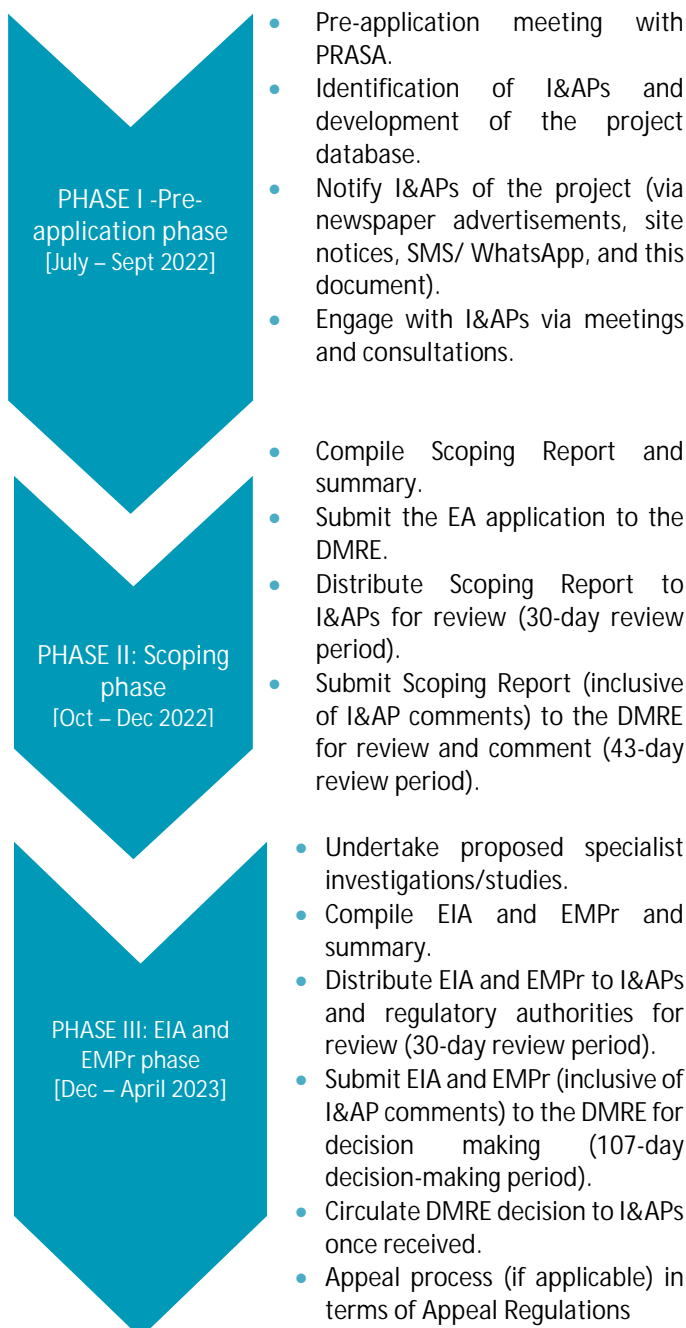
- Aquatic and Terrestrial Biodiversity assessments;
- Heritage assessment
- Palaeontology assessment; and
- Hydrogeology assessment.

## 12. ENVIRONMENTAL AUTHORISATION AND PUBLIC PARTICIPATION PROCESS

### 12.1 ENVIRONMENTAL AUTHORISATION PROCESS

The EIA process provides information on the project, pertaining to procedural components and the environment in which the project is proposed. It identifies and assesses, in consultation with I&APs, the potential negative and positive biophysical, cultural, and socio-economic impacts.

The environmental assessment process also reports on management measures required to mitigate impacts to an acceptable level and incorporates requirements for monitoring programmes (where required). The process steps and estimated timeframes are provided below.



### 12.2 PUBLIC PARTICIPATION PROCESS

The purpose of the public participation process is to notify I&APs of the proposed project and to provide them with the relevant information and give opportunity to raise issues or concerns regarding the proposed project. The public participation process will be undertaken in accordance with the requirements of Chapter 6 of the EIA Regulations 2014, as amended. I&APs involved in the EIA process are listed below:

#### I&APS INVOLVED IN THE ENVIRONMENTAL AUTHORISATION PROCESS

##### LANDOWNERS, LAND USERS AND OTHER I&APS

- Surrounding landowners, land users and communities.
- Non-government organisations and associations.
- Surrounding mines and industries.
- Parastatals.

##### COMPETENT AUTHORITY

- Department of Mineral Resources and Energy (DMRE)
- Petroleum Agency South Africa (PASA)

##### COMMENTING AUTHORITIES

- Free State Department of Water and Sanitation
- Free State Department of Economic Development, Tourism and Environmental Affairs
- Free State Department of Agriculture and Rural Development
- Provincial South Africa Heritage Resource Agency (SAHRA)

##### LOCAL AUTHORITIES

- Moqhaka Local Municipality
- Nketoana Local Municipality
- Fezile Dabi District Municipality
- Thabo Mofutsanyane District Municipality

Please let us know if there are any additional parties that should be involved.

## 13. ENVIRONMENTAL LEGAL FRAMEWORK AND ENVIRONMENTAL PROCESS REQUIREMENTS

The figure overleaf provides an overview of the Scoping and EIA Process.

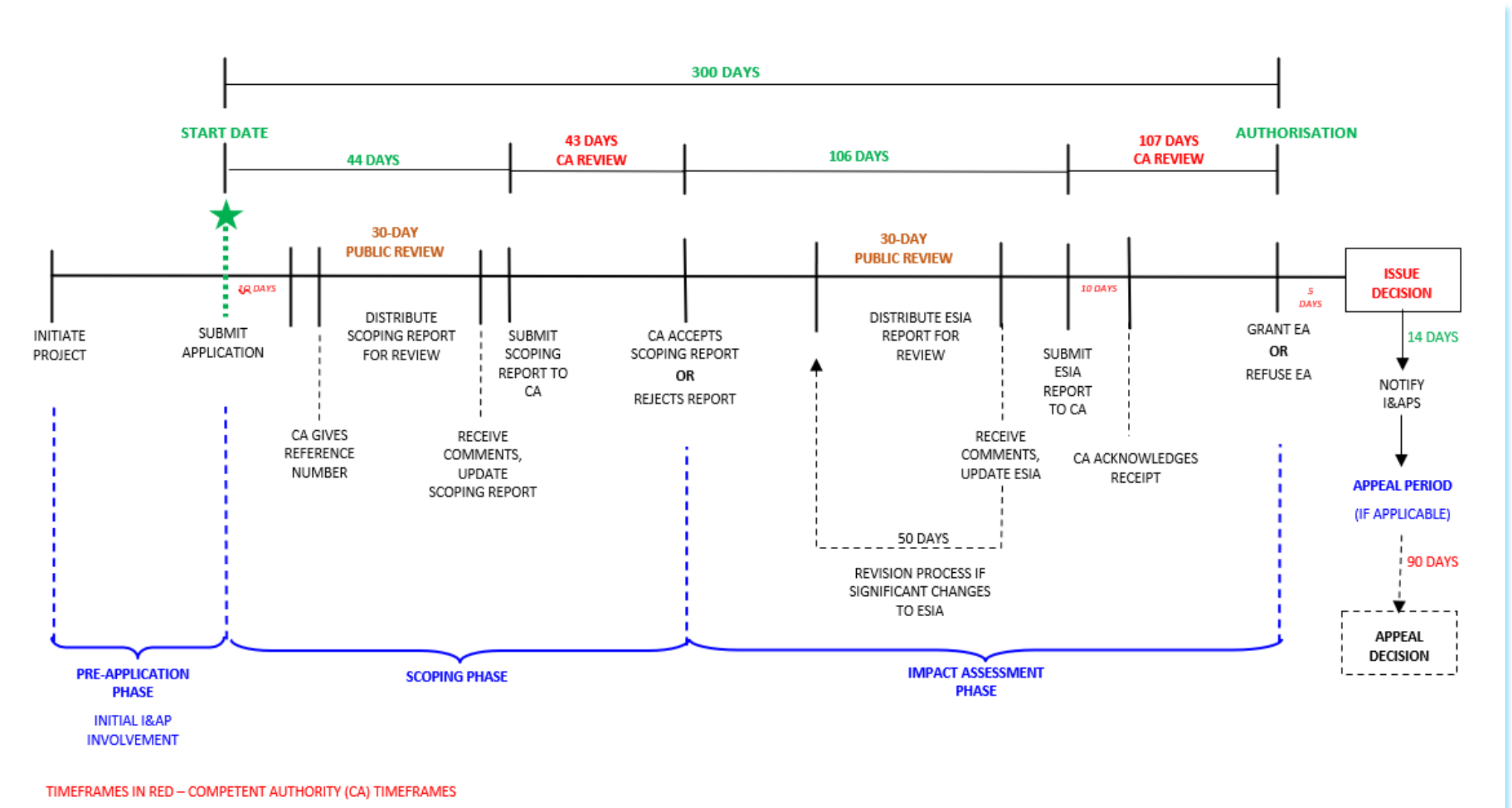


Figure 4: Scoping and EIA Process

