

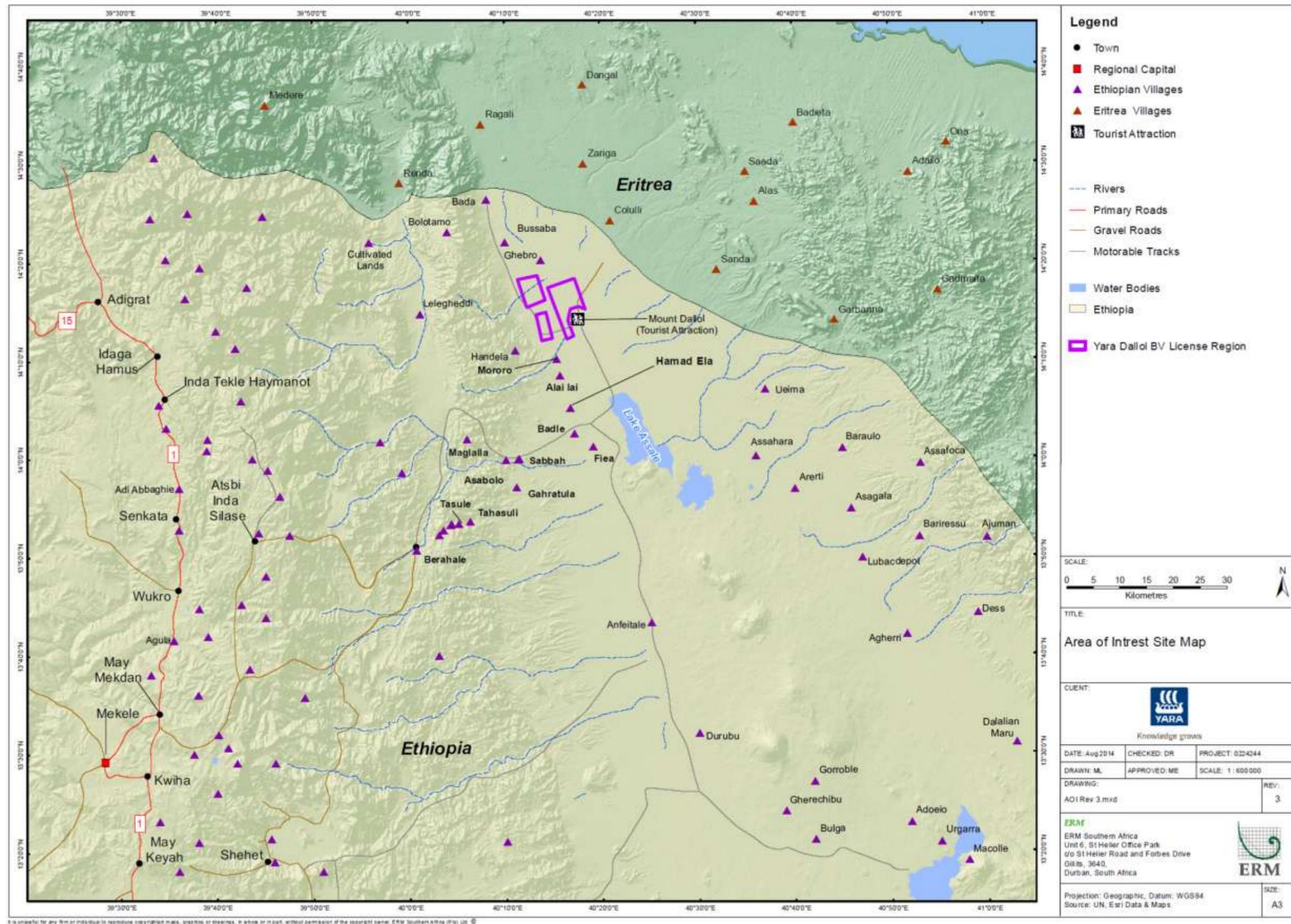
1.1 BACKGROUND TO THE YARA DALLOL POTASH PROJECT

Yara International is a leading global fertilizer company with sales of fertilizer to about 150 countries globally. As part of Yara International's overall upstream strategy, the company is exploring for suitable raw sources that can be developed and used as a source to Yara International's global fertilizer production and directly as finished product in its product portfolio. Yara International's production system includes world-scale ammonia and fertilizer plants, and phosphate mines. These upstream processes produce ammonia, urea, nitrates, NPKs and other nitrogen-based products, as well as phosphoric acid and feed phosphates. Ammonia, urea and nitric acid form the starting point for Yara International's diverse portfolio of crop nutrition and industrial products, and environmental solutions. Yara International was the world's largest producer of ammonia, nitrate and complex fertilisers. In 2013, Yara International sold 23.7 million tons of fertilizer on six continents.

To complement these upstream processes, Yara International has recently started a subsidiary company, Yara Dallol BV, which is involved in the exploration and mining development of potash concessions in Ethiopia. These concessions are located in the Danakil Depression, Afar National Regional State (ANRS), Ethiopia (*Figure 1.1*). Yara International, through its subsidiary, proposes to develop a potash mine – the Yara Dallol Potash Project (hereafter referred to as the proposed Project) within these concession areas. The concession areas are known as Musley (10.1km²) ⁽¹⁾, North Musley (18.7km²) and Crescent (35.3km²) (*Figure 1.2*). The resource potential of this area is significant, and has the potential to produce 600,000 metric tonnes of potash per annum for approximately 20 years based on the resources in the western part of North Musley only. The Project will produce Sulphate of Potash (SOP or K₂SO₄); this product is used extensively with application to chlorine sensitive plants, such as citrus fruit trees.

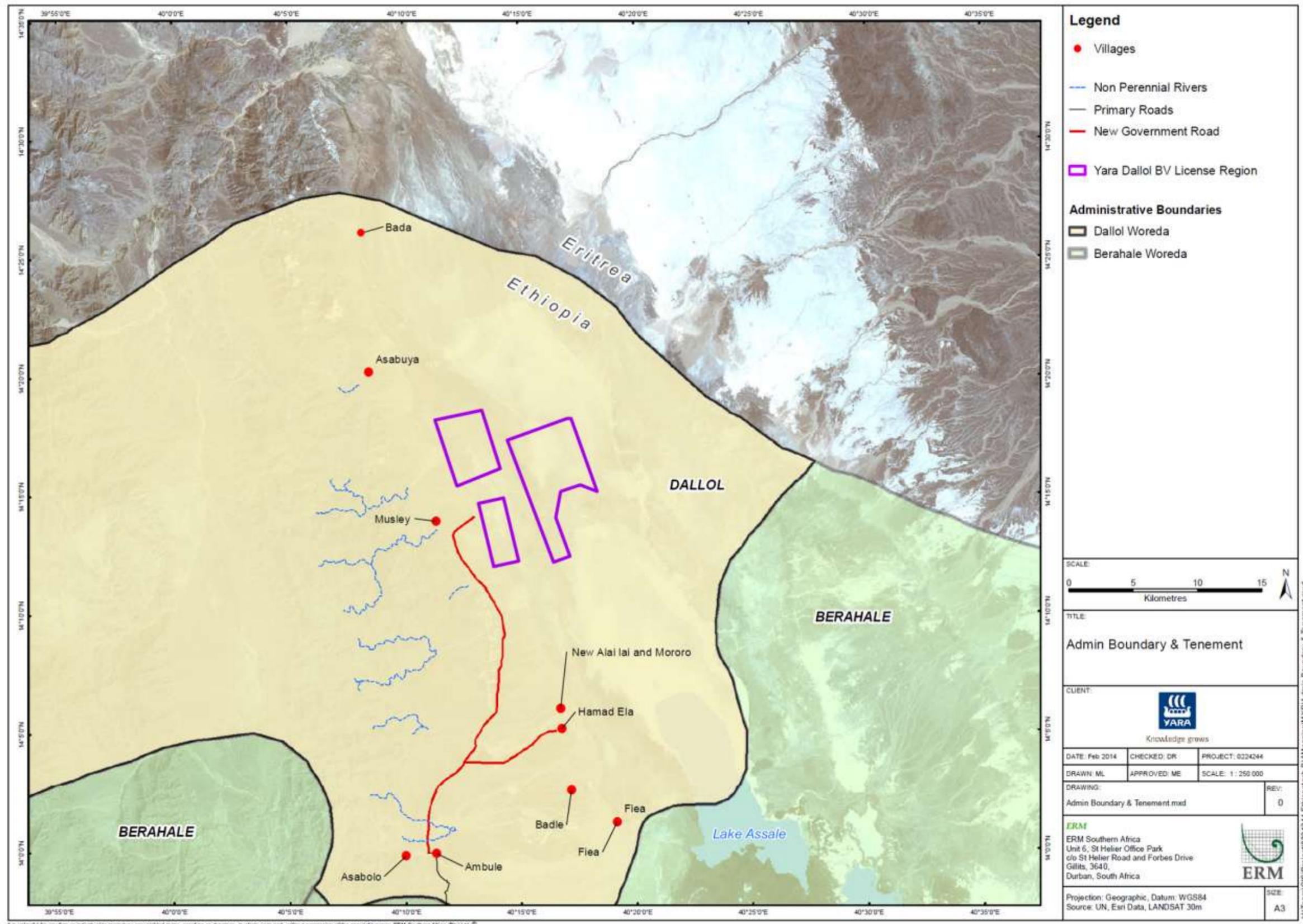
(1) **Please Note** – Yara Dallol BV currently holds one exploration license for North Musley and Crescent Concessions (Reference No.: MOM/0130-0134/2000) and is (as a result of the license lapsing) in the process of **re-applying** for an exploration license for the Musley Concession. Moreover, once mineral resources have been verified and feasibility concerning the proposed Project verified, Yara Dallol BV will be applying for mining rights for all three concessions (North Musley, Crescent and Musley). As a result it is deemed appropriate to include the Musley Concession in the overall ESIA Study Area and to assess the likely social and environmental impacts to sensitive receptors that occur within this area so as to suggest appropriate mitigation / management measures.

Figure 1.1 Location of the Proposed Yara Dallol Potash Project; Afar National Regional State, Ethiopia



Please Note - Yara Dallol BV is in the process of re-applying for an exploration license for the Musley Concession, and as a result it is deemed appropriate to include the Musley Concession in the overall ESIA Study Area

Figure 1.2 Location of the Yara Dallol BV Concessions



Please Note - Yara Dallol BV is in the process of re-applying for an exploration license for the Musley Concession, and as a result it is deemed appropriate to include the Musley Concession in the overall ESIA Study Area

Under the Ethiopian Environmental Impact Assessment (EIA) Proclamation (No. 299/2002), the proposed Project requires an EIA and authorisation by the Ministry of Environment and Forestry (MoEF) before any mining activities may commence. However, although the MoEF is mandated to drive environmental impact assessment processes in Ethiopia, the Ministry of Mines (MoM) has an Environmental and Community Development Directorate. It is this Directorate that reviews and makes decisions on mining related ESIA's. Yara Dallol BV have appointed Environmental Resources Management Southern Africa (Pty) Limited (hereafter referred to as ERM) as independent environmental practitioners to undertake an Environmental and Social Impact Assessment (ESIA) ⁽¹⁾ for the proposed Project.

The objective of this ESIA is to assess the potential environmental and social impacts associated with the planning, construction, operation and decommissioning phases of the proposed Project. Yara Dallol BV has not yet commenced mining, and are currently carrying out exploration activities to assess the financial feasibility of the proposed mine. Exploration entails field investigations involving drilling, sampling, mapping of the target mineral resource, pilot testing, process development and ancillary investigations to determine the overall economic feasibility of the proposed Project.

Yara Dallol BV is one of three companies that are currently carrying out exploration activities in the Danakil Depression. Although this ESIA will assess the potential cumulative impacts associated with other mining activities in the Danakil Depression, it will not specifically assess the direct environmental and social impacts associated with each of these companies' mining activities. Furthermore, at this stage of the proposed Project, the routing of linear transport infrastructure, including transport routes and power lines to site and from site have been finalised; however, these need to be officially sent to Yara Dallol BV. This ancillary infrastructure will need to be considered under separate environmental and social studies by the third parties establishing this infrastructure. These third parties include the Ethiopian Roads Authority (ERA) and Djiboutian Roads Authority, who are the project developers of the proposed road routes from the site of the Yara Dallol potash project through to the port of Tadjoura in Djibouti (which is currently under construction); and the Ethiopian Electricity Power (EEP), who are the project developers of the proposed 230kV power line from Mekele to a sub-station in the Project Area. This proposed power line forms part of the greater national grid expansion project.

1.2

THE ESIA PROCESS TO DATE

This ESIA is being undertaken in accordance to the Ethiopian EIA Proclamation (No. 299 of 2002). The Ethiopian EIA process is made up of a

(1) The use of the term ESIA as opposed to EIA is to emphasise that the process will not only assess environmental impacts but will also assess potential socio-economic impacts of the proposed Project.

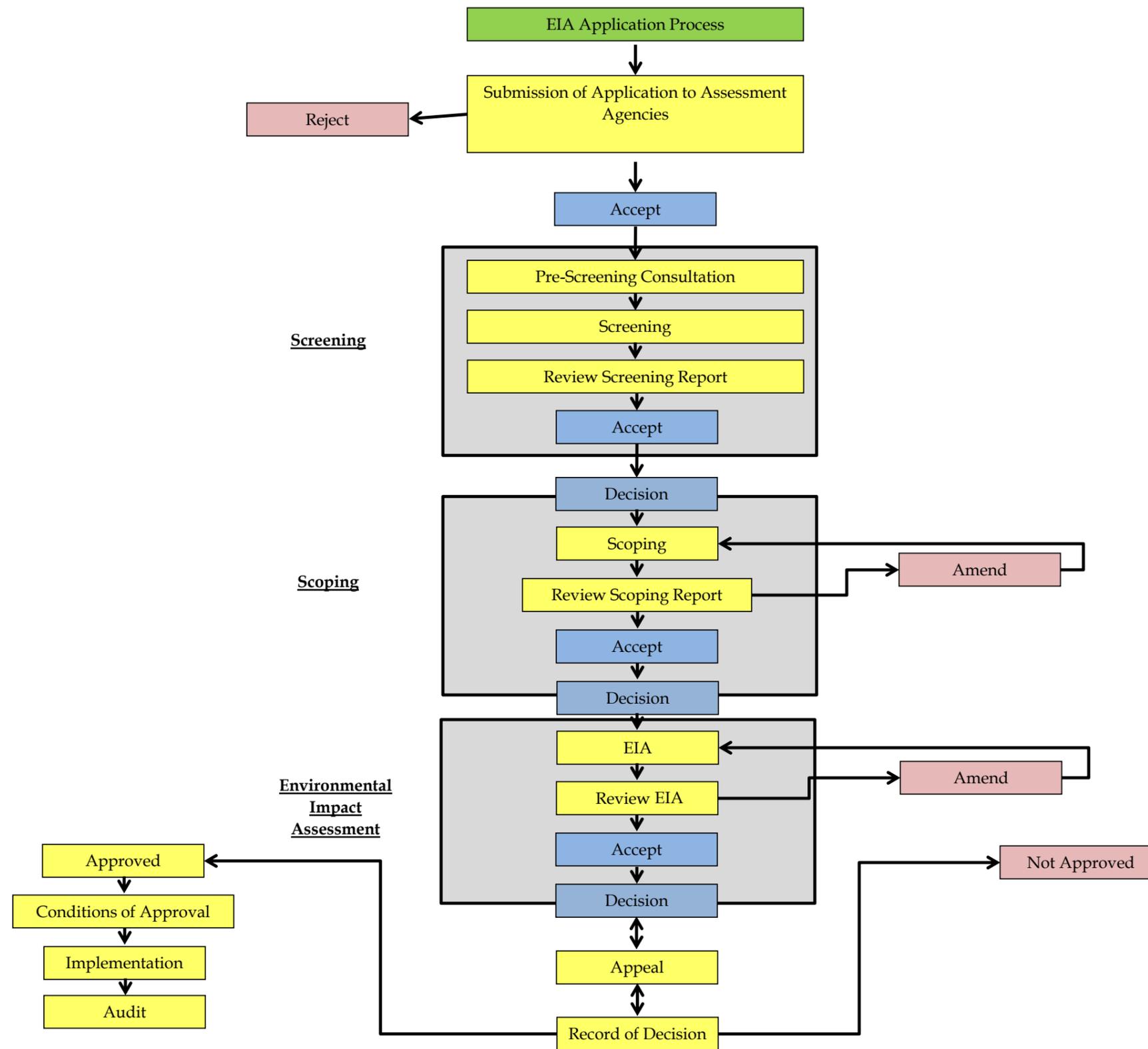
number of procedural steps, as prescribed in the Ethiopian EIA Proclamation (no. 299/2000) (refer to *Chapter 5*). These procedural steps are also prescribed in the EIA Guideline Document (2000) and the Draft EIA Guideline for Mineral and Petroleum Operation Projects (Series 1, 2003), both of which are published by the Federal Democratic Republic of Ethiopia Environmental Protection Authority (refer to *Chapter 5*). These steps and the process undertaken to date is as follows:

1. **Pre-Screening** - not considered relevant in the case of the Yara Dallol Potash Project, as a full scoping and EIA was deemed necessary due to the proposed Project involving the development of a new mine.
2. **Scoping** - the objective of this phase was to present a description of the proposed Project, the ESIA process, relevant legislation, the physical, biological, socio-economic and health characteristics of the Project Area ⁽¹⁾ and surrounds, perceived issues and an outline of the Terms of Reference (ToR) for the various specialist studies that will assess the identified environmental and social issues. During this phase, interested and affected parties and key stakeholders were identified and provided with an opportunity to raise any interim comments/concerns/queries that they may have with the proposed Project. The final scoping report was approved by the Ethiopian Federal Ministry of Mines on 12 June 2014 (reference number: MA229/66) (refer to *Annex A*).
3. **Environmental and Social Impact Assessment** - This study functions as the main assessing document for the ESIA study and provides a detailed analysis of the potential environmental and social impacts, supported by objective and defensible scientific studies. It forms the basis on which the environmental license/approval is issued.

The Ethiopian EIA procedure according to the aforementioned proclamation and guidelines is outlined below in *Figure 1.3*.

(1) **Please Note** - the *Project Area* is defined as Yara Dallol BV's two concession areas (namely the North Musley and Crescent concessions) and the Musley (which is under an exploration area extension application), **but also includes the surface areas outside of Yara Dallol BV's concession areas** that will be used for linear infrastructure (including pipelines and access roads located outside of the concession area that will connect to water and power supply corridors and to other main routes), as well as alluvial fans located outside of the Yara Dallol BV concession areas, that will be used as a source of water supply to the proposed Project. These areas are directly to the west of Yara Dallol BV's concession area. The areas directly to the north of Yara Dallol BV's concession area are included in the G&B Central Africa Resources Plc concession. This is illustrated in *Chapter 2* of this report.

Figure 1.3 Ethiopian EIA Process



Host country laws of Ethiopia relevant to the successful implementation of all components of the proposed Project were also considered during the EIA process and all necessary licensing and permitting requirements have been identified (refer to *Chapter 5*) based on current Project concepts and design.

In addition to the applicable regulations and norms of the government of Ethiopia, the proposed Project has committed to comply with the requirements of the International Finance Corporation (IFC) and the World Bank Safeguard Policies. A legal framework is provided in *Chapter 5*.

1.3 **PURPOSE OF THIS REPORT (ESIA REPORT)**

The main objectives of this ESIA report are to present the following:

- A detailed description of the proposed Project and relevant Project alternatives;
- The ESIA process and a detailed legal register of legislation, guidelines and strategies (both national and international) pertinent to the proposed Project and associated ESIA;
- The outcomes associated with stakeholder engagement activities carried out to date;
- A detailed baseline review of the physical, biological and socio-economic characteristics of the Project Area and surrounds;
- An assessment of impacts to the physical, biological and socio-economical environments related with the different phases (construction, operational and decommissioning and closure phases) of the proposed Project;
- Mitigation measures and associated management plans that aim to avoid /minimise/manage the severity of identified impacts; and
- An assessment of cumulative impacts associated with other planned, existing or project-related developments in the broader area of the proposed Project.

1.4 **STRUCTURE OF THIS REPORT**

This ESIA is broken up into three Parts. These include:

- **Part I** – ESIA Report;
- **Part II** – Annexures; and
- **Part III** – Environmental and Social Management Plans (ESMP's).

The structure and contents of these Parts may be seen in *Table 1.1* to *Table 1.3*.

Table 1.1 **Part I - ESIA Report**

| Chapter | Contents |
|--|--|
| <i>Chapter 1 - Introduction</i> | Presents a brief background to the proposed Project and the purpose and structure of the ESIA report |
| <i>Chapter 2 - Project Description</i> | Describes the Project Area and the proposed Project components, including an overview of ancillary infrastructure |
| <i>Chapter 3 - Project Motivation</i> | Describes the need and motivates the rationale for the proposed Project |
| <i>Chapter 4 - Project Alternatives</i> | Discusses the Project alternatives that have been considered in the ESIA process |
| <i>Chapter 5 - Institutional and Legal Framework of Ethiopia</i> | Describes the national environmental and social legislative, policy and administrative requirements, as well as international good practise and local development plans and guidelines applicable to the Project |
| <i>Chapter 6 - Environmental and Social Impact Assessment Process</i> | Describes the ESIA Process followed for the proposed Yara Dallol Potash Project and the associated impact assessment methodology employed |
| <i>Chapter 7 - Stakeholder Engagement</i> | Summarises the stakeholder engagement activities undertaken for the ESIA Project to date |
| <i>Chapter 8 - Receiving Environment - Physical and Biological Characteristics of the Project Area and Surrounds</i> | Provides a detailed baseline assessment of the receiving physical and biological environment in the Project Area and surrounds |
| <i>Chapter 9 - Receiving Environment - Socio-economic Characteristics of the Project Area and Surrounds</i> | Provides a detailed baseline assessment of the receiving socio-economic and health environment in the Project Area and surrounds |
| <i>Chapter 10 - Assessment of Physical and Biological Impacts and Mitigation</i> | Presents the predicted impacts to the physical and biological environment as a result of the proposed Project and associated mitigation recommendations |
| <i>Chapter 11 - Assessment of Socio-economic Impacts and Mitigation</i> | Presents the predicted impacts to the socio-economic environment as a result of the proposed Project and associated mitigation recommendations |
| <i>Chapter 12 - Assessment of Cumulative Impacts and Mitigation</i> | Presents the cumulative impacts that are as a result of existing and further planned developments in the greater area and other Project related developments |
| <i>Chapter 13 - Environmental and Social Management System</i> | Presents a framework for the system necessary for the integrated management of all social and environmental management plans |
| <i>Chapter 14 - Conclusion</i> | Summarises the key findings of the ESIA |

Table 1.2 **Part II - Annexure**

| Annexure | Contents |
|---|--|
| <i>Annex A - Scoping Report Approval Letter</i> | Approval letter for the Scoping Report from the Federal Democratic Republic of Ethiopia Ministry of Mines. |
| <i>Annex B - Primary Baseline Study Methodologies</i> | Presents the methodology used to collect primary and secondary baseline for specific studies. |

| Annexure | Contents |
|---|---|
| <i>Annex C – Stakeholder Engagement Programme</i> | Presents a detailed overview of all stakeholder engagement activities undertaken as part of the ESIA process. |
| <i>Annex D – Study Specific Criteria for Assessing Social Impacts</i> | Describes the impact criteria used to define social sensitivities. |
| <i>Annex E – Faunal List and Inventory of Cultural Heritage Sites</i> | Provides a complete inventory of all faunal species and cultural heritage sites in the Project Area. |

Table 1.3 *Part III – Environmental and Social Management Plans*

| Management Plan | Contents |
|--|---|
| Environmental Management Plans | |
| <i>Annex A – Air Quality Management Plan</i> | A plan that addresses potential air quality related impacts that have been identified in the ESIA and associated air quality impact assessment. |
| <i>Annex B – Noise Management Plan</i> | A plan that addresses potential noise related impacts during the various phases of the proposed Project and associated monitoring requirements. |
| <i>Annex B – Biodiversity Management Plan</i> | A plan to set out a formal system by which Yara Dallol BV can manage mitigation measures that will reduce the impacts on biodiversity. |
| <i>Annex C – Emergency Response Plan</i> | A plan that presents a framework outlining procedures essential for effectively containing emergency situations for the proposed Project. |
| <i>Annex D – Integrated Mine Closure Plan</i> | A plan that presents a framework which aims to address environmental issues related to the rehabilitation, decommissioning and closure of the proposed Project. |
| <i>Annex E – Spill Prevention, Control and Containment Plan</i> | A plan developed to address the general requirements for management of unplanned spills of dangerous or hazardous materials. |
| <i>Annex F – Waste Management Plan</i> | A plan developed to address the potential waste-related impacts that have been identified in the ESIA. |
| <i>Annex G – Water Management Plan</i> | A plan developed to address the potential water related impacts that have been identified in the ESIA. |
| Social Management Plans | |
| <i>Annex H – Cultural Heritage Management Plan</i> | Provides detail regarding the implementation of avoidance, mitigation and management measures for impacts related to items of archaeological or cultural heritage significance. |
| <i>Annex I – Community Health Safety and Security Management Plan</i> | A plan describing the approach to managing the relevant impacts related to community health safety and security. |
| <i>Annex K – In-Migration Management Plan</i> | A plan describing the approach to managing the potential impacts and consequences of Project-Induced In-Migration. |
| <i>Annex L – Sourcing, Procurement and Recruitment Management Plan</i> | A plan guiding the sourcing and recruitment of the direct and indirect workforce and the procurement of goods and services. |

| Management Plan | Contents |
|---|--|
| <i>Annex M - Worker Management Plan</i> | A plan providing detail regarding the implementation of avoidance, mitigation and management measures for workforce related impacts. |

1.5 DETAILS OF THE ESIA PROJECT TEAM

A list of the people on the ERM Project team is provided in *Table 1.4*. As far as possible, ERM used Ethiopian companies for the specialist studies, but used expertise from outside Ethiopia where local expertise was lacking.

Table 1.4 *ERM Project Team*

| Activity | Person and Company |
|---|--|
| Overall Project Management and compilation of reports, assessments and management plans | <ul style="list-style-type: none"> - Mike Everett (ERM) - Dieter Rodewald (ERM) |
| GIS and Mapping Support | <ul style="list-style-type: none"> - Michael Longhurst (ERM) |
| Ecology | <ul style="list-style-type: none"> - Andrew Cauldwell (ERM) - Professor Brook Lemma (Ethiopian - ESSD Consultancy) - Teklehaimanot Haileselassie (Ethiopian - ESSD Consultancy) |
| Hydrogeology | <ul style="list-style-type: none"> - Andreas Stoll (ERM) - Meris Mills (ERM) - Specialist Water Resources report provided by Malcolm Anderson (MWH) |
| Socio-economic and Stakeholder Engagement | <ul style="list-style-type: none"> - Belinda Ridley (ERM) - Alastair Gow-Smith (ERM) - Nomsa Fulbrook-Bhembe (ERM) - Janet Mkhabela (ERM) - Samuel Hailu (Ethiopian - TS Environmental) - Hirut Yibabe (Ethiopian - Independent Specialist) - Dr Ali Hassan Muhaba (Ethiopian - Independent Specialist) |
| Archaeology and Cultural Heritage | <ul style="list-style-type: none"> - Emlen Myers (ERM) - Doug Park (ERM) - Dr. Hailu Zeleke (Ethiopian - Independent Specialist) |
| Visual | <ul style="list-style-type: none"> - Peter Austin (ERM) |
| Air Quality | <ul style="list-style-type: none"> - Dr Chris HazellMarshall (ERM) - Yves Verlinden (ERM) |
| Noise study | <ul style="list-style-type: none"> - Rod Linnett (ERM) - George Chatzigiannidis (ERM) - Justin Kmelisch (ERM) |

1.6 DETAILS OF THE APPLICANT AND ENVIRONMENTAL ASSESSMENT PRACTITIONER

Any comments on the ESIA Report should be provided to Yara Dallol BV and ERM at the following addresses.

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Country Manager
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E-mail : sanjay.rathore@yara.com

Consultant: **Environmental Resources Management**
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Gillitts, Durban
South Africa

Contact: Mr Mike Everett
Project Director
Tel: +27 (0) 31 767 2080
Email: mike.everett@erm.com