



Environmental Impact Assessment

**DRAFT SCOPING REPORT
FOR THE PROPOSED
CONSTRUCTION AND
OPERATION OF THE
CAUSTIC SODA MAKE-UP
PLANT IN CHLOOKOP,
KEMPTON PARK,
EKURHULENI
METROPOLITAN –
GAUTENG PROVINCE**



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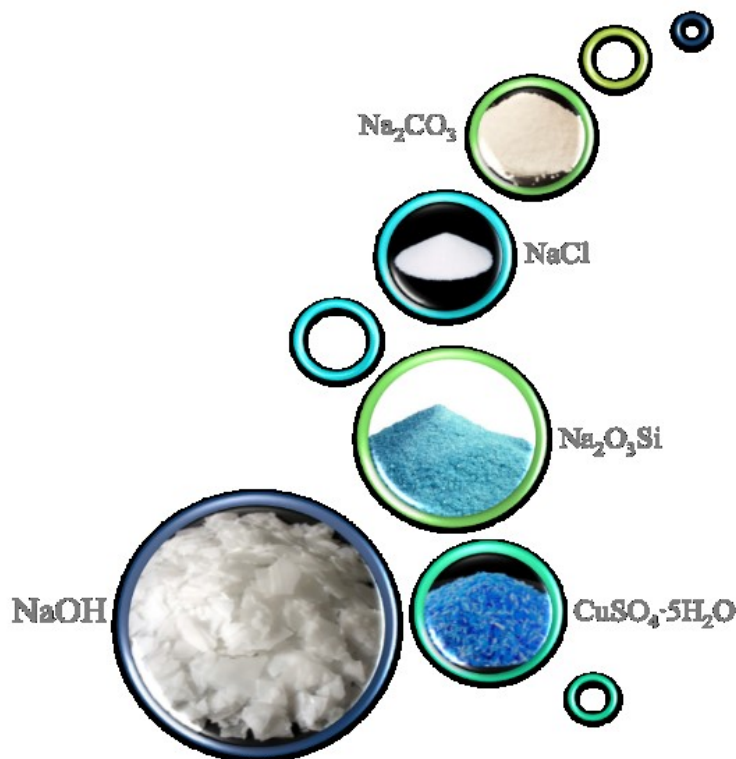
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Draft Scoping Report for the Proposed Construction and Operation of the Caustic Soda Make-Up Plant in Chloorkop, Kempton Park, Ekurhuleni Metropolitan – Gauteng Province

Caustic Soda in solid flakes & lye form



Document Control

ENVIRONMENTAL AUTHORISATION APPLICATION: DRAFT SCOPING REPORT FOR THE PROPOSED CONSTRUCTION AND OPERATION OF THE CAUSTIC SODA MAKE-UP PLANT IN EKURHULENI METROPOLITAN, CHLOORKOP, KEMPTON PARK – GAUTENG PROVINCE

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Executive Summary

AFRICAN Chemicals (AC) proposes to construct and operate a Caustic-Make-up plant. The proposed construction and operation will be situated at ERF No 198 of the farm Chloorkop-IR, within the City of Ekurhuleni metropolitan in Gauteng Province. The proposed development aims to operate autonomously with its own slip road, security access, weighbridge, warehouse, production facility, tank farm, staff and technology.

African Chemicals wishes to import dry caustic, transport it to the newly proposed facility in Johannesburg, Chloorkop where it can be dissolved into lye form and loaded into customer tanker trucks or Intermediate Bulk Containers (IBC) containers. The dissolution, storage and loading of all this form part of the **Caustic Make-up Plant**.

AFRICAN Chemicals (AC) was founded in 2014 and after two years of preparation and structuring it was incorporated in 2016. AFRICAN Chemicals (AC) is an established Qualifying Small Enterprise - as defined in the Broad Based Black Economic Empowerment Codes of Good Practice of 2016 - in the cleaning and industrial chemicals manufacturing sector.

African Chemicals (AC) is also a South African based bulk chemicals production, marketing and distribution which is focused on supplying products and services to the African market. AC currently distributes chemicals in the mining sector as well as market in the DRC and provides solutions within Southern Africa. AC has an immediate access in the supply of hydrochloric acid,

caustic soda and chlorine to its customers in Southern Africa.

BATACH HOLDINGS (BATACH) South Africa (Pty) Ltd has been appointed by **African Chemicals (AC)** as an independent Environmental Assessment Practitioner to undertake the required environmental applications on behalf of African Chemicals (AC) for the proposed project. In terms of the latest amendments to the 2014 Environmental Impact Assessment Regulations, as published on 07 April 2017, an application for Environmental Authorisation via a Scoping and Environmental Impact Reporting process is required. This process consists of two phases, a Scoping Phase and an Environmental Impact Assessment Phase.

This document constitutes the Draft Scoping Report (DSR), which contains the information applicable to the Scoping Phase. This report is to be distributed to relevant authorities and key stakeholders and will be made available to the general public for review and comments. All comments received on the draft report, along with the responses, will be incorporated into the Final Scoping Report to be submitted to the Gauteng Department of Agriculture and Rural Development (GDARD), City of Ekurhuleni metropolitan and DWS and where necessary, for a decision as to whether the application may proceed to the next phase. This report includes the following:

- Introduction, the objectives of the scoping process and the legislated requirements for the content of a Scoping Report (Chapters 1 -3).

- Details regarding the Environmental Assessment Practitioner (Chapter 4).
- Project Location, Motivation and Production Inputs (Chapters 5 -6).
- The legislative context (Chapter 7).
- Project need and desirability (Chapter 8).
- Alternatives (Chapter 9).
- The environmental attributes of the project site (Chapter 10).
- The public participation process, Socio-economic and identified issues (Chapters 11).
- Issues (Chapter 12)
- The assessment methodology and preliminary assessment (Chapters 13)
- A Plan of Study for the Environmental Impact Assessment Phase (Chapter 15).
- The Environmental Assessment Practitioner affirmation and other requirements (Chapters 16).
- Conclusions and recommendations **(Chapter 18)**.

Based on the investigations that will be undertaken during Scoping, Batach Environmental team is of the opinion that the proposed activity is not in conflict with any legislation and or in prohibition with amended environmental legislations. Furthermore, the Draft Scoping Report complies substantially with Appendix 2 of Government Notice 362 (07 April 2017) and all identified applicable protocols and minimum information requirements. The applicant is willing and able to ensure compliance with these requirements within the prescribed timeframe. Batach Environmental team, therefore recommends that the Draft Scoping Report be accepted, with or without conditions, and that the applicant be allowed to continue with the tasks contemplated in the Plan of Study for the Impact Assessment Phase as outlined below in the Plan of Study (PoS).

List of Abbreviations

AC –	African Chemicals
AEL	Atmospheric Emissions Licence
AQIA	Air Quality Impact Assessment
BA	Basic Assessment
BATACH	Batach Holdings Pty Ltd South Africa
BBBEE	Broad Based Black Economic Empowerment
CAPEX	Capital Expenditure
CV	Curriculum Vitae
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DEIAR	Draft Environmental Impact Assessment Report
DSR:	Draft Scoping Report
Dti	Department of Trade and Industry
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EHS	Environmental, Health and Safety
EMF	Environmental Management Framework
EMPr	Environmental Management Programme
EMS	Environmental Management System
FEIAR	Final Environmental Impact Assessment Report
FSR	Final Scoping Report
GDARD	Gauteng Department of Agriculture and Rural Development
GN	Government Notice
HVAC	Heating, Ventilation and Air Conditioning
I&AP	Interested and Affected Party
IBC	Intermediate Bulk Containers
ICT	Information Communication Technology
IDP	Integrated Development Plan
IDZ	Industrial Development Zone
IFAC	International Guidelines on Environmental Management Accounting

ISO	International Standards Organisation
IWWMP –	Integrated Water Waste Management Plan
LED	Light Emitting Diode
MBC	Membrane Cell Caustic Soda Solution
MCC	Motor Container Centre
MES	Minimum Emission Standard
MHI	Major Hazard Installation
NEMA	National Environmental Management Act 107 of 1998
NEM:AQA	National Environmental Management: Air Quality Act 39 of 2004
NEM:BA	National Environmental Management: Biodiversity Act 10 of 2004
NEM:CMA	National Environmental Management: Coastal Management Act 24 of 2008
NEM:WA	National Environmental Management: Waste Act 59 of 2008
NHRA	National Heritage Resources Act 25 of 1999
NWA	National Water Act 36 of 1998
OHSA	Occupational Health and Safety Act 85 of 1993
OPEX	Operational Expenditure
PLC	Programmable Logic Controller
QSE	Qualifying Small Enterprise
S&EIR	Scoping and Environmental Impact Report
SDF	Spatial Development Framework
SEZ	Special Economic Zone
SG	Surveyor General
SMME	Small, Medium and Micro-sized Enterprise
WML	Waste Management Licence
WUL	Water Use Licence

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Compiler

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1. Introduction

African Chemicals (Pty) Ltd (AC) is a South African based bulk chemicals production, marketing and distribution company focused on supplying products and services to the African industrial market. The company was founded in 2014 and after two years of preparation and structuring it was incorporated in 2016. It was born from years of market analysis of the global and domestic chemicals markets. Through this activity it was concluded that there is a significant opportunity to not only close the supply deficit of several products but also for Africans to produce chemicals and market them within the continent in the interest of enhanced economic conditions in Africa. As a Level I BBBEE, AC had to find creative ways to participate in a market which has no Black Industrialist players. It is an established Qualifying Small Enterprise - as defined in the Broad Based Black Economic Empowerment Codes of Good Practice of 2016 - in the cleaning and industrial chemicals manufacturing sector.

AFRICAN Chemicals (AC) proposes to construct and operate a Caustic-Make-up plant. The proposed construction and operation will be situated at ERF No 198 IR, Chloorkop, within the City of Ekurhuleni metropolitan in Gauteng Province. The proposed development aims to operate **autonomously with its own proposed two entrances, security access, weighbridge, warehouse, production facility, tank farm, staff and technology**. African Chemicals (AC) wishes to import dry caustic, transport it to the newly proposed facility in Johannesburg, Chloorkop where it can be dissolved into lye form and loaded into customer tanker trucks or Intermediate Bulk Containers (IBC). The dissolution, storage and loading will all form part of the **Caustic Make-up Plant**. The aim of this operation is designed to be fully automated and the make-up tank will be fed through weigh feeders, which will ensure consistent product quality.

In terms of the latest amendments to the 2014 Environmental Impact Assessment (EIA) Regulations, as published on 07 April 2017, an application for Environmental Authorization via a Scoping and Environmental Impact Reporting (S&EIR) process is required. The S&EIR process consists of two phases, **a Scoping Phase and an EIA Phase**. This document constitutes a Draft Scoping Report (DSR) that contains the information applicable to the Scoping Phase. The DSR is to be distributed to relevant authorities and key stakeholders and made available to the general public for review and comments. All comments received on this draft report, along with the responses, will be incorporated into the Final

Scoping Report (FSR) to be submitted to the Gauteng Department of Agriculture and Rural Development (GDARD) for a decision as to whether the application may proceed to the EIA Phase or not.

This report includes the following:

- Introduction, the objectives of the scoping process and the legislated requirements for the content of a Scoping Report (**Chapters 1 -3**).
- Details regarding the Environmental Assessment Practitioner (**Chapter 4**).
- Project Location, Motivation and Production Inputs (**Chapters 5 -6**).
- The legislative context (**Chapter 7**).
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- The environmental attributes of the project site (**Chapter 10**).
- **The public participation process, Socio-economic and identified issues (Chapters 11).**
- **Issues (Chapter 12)**
- The assessment methodology and preliminary assessment (**Chapters 13**)
- A Plan of Study for the Environmental Impact Assessment Phase (**Chapter 15**).
- The Environmental Assessment Practitioner affirmation and other requirements (**Chapters 16**).
- Conclusions and recommendations (**Chapter 18**).

1.1. The need for Environmental Impact Assessment

In terms of the National Environmental Management Act (No. 107 of 1998) and the Amendments to the 2014 EIA Regulations, as published by the Department of Environmental Affairs (DEA) in Government Notice (GN) 326 on 07 April 2017. The Scoping of listed activities have been identified which require environmental authorization from the competent authority as follows: -

- GN 326 specifies the EIA procedures to be followed.
- GN 327 provides Listing Notice 1 – activities that require a Basic Assessment (BA) process.
- **GN 325 provides Listing Notice 2 – activities that require an S&EIR process.**
- GN 324 provides Listing Notice 3 – activities in identified geographical areas that require a BA process.

The caustic flakes will be delivered in 1000 kg or 1250 kg bulk bags and will be stored in a warehouse. AC has decided to import the product in solid form, transport it by road to Johannesburg, and dissolve it back into lye form before placing the product into the market. The proposed Caustic Make-up Plant process is expected to produce caustic lye at estimated **5000 tonnes** per month at 45-50% weight by weight (w/w) desired caustic solution concentration.

The process triggers the following listed activities:

1.2 Listed Activities: GN 325 Listing Notice 2

This Listing Notice called the Environmental Impact Assessment Regulations Listing Notice 2 of 2014, which took effect on 08 December 2014. The following NEMA listed activities are included in the current application (refer to table below)

Activity 4 of GN 325: The development and related operation of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres.

Activity 6 of GN 325: The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent, excluding—

- (i) activities which are identified and included in Listing Notice 1 of 2014;
- (ii) activities which are included in the list of waste management activities published in terms of 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;
- (iii) the development of facilities or infrastructure for the treatment of effluent, polluted water, wastewater or sewage where such facilities have a daily throughput capacity of 2 000 cubic metres or less; or
- (iv) where the development is directly related to aquaculture facilities or infrastructure where the wastewater discharge capacity will not exceed 50 cubic meters per day

Activity 7 of GN 325 The development and related operation of facilities or infrastructure for the bulk transportation of dangerous goods—

- (i) in gas form, outside an industrial complex, using pipelines, exceeding 1 000 metres in length, with a throughput capacity of more than 700 tons per day
- (ii) in liquid form, outside an industrial complex, using pipelines, exceeding 1 000 metres in length, with a throughput capacity of more than 50 cubic metres per day; or

In solid form, outside an industrial complex, using funiculars or conveyors with a throughput capacity of more than 50 tons per day.

Activity 56 of GN 327 The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre—

- (i) where the existing reserve is wider than 13,5 meters; or
- (ii) where no reserve exists, where the existing road is wider than 8 metres excluding where widening or lengthening occur inside urban areas.

2. Objectives

The objectives of the scoping process are specified in Appendix 2 of the Amendments to the 2014 EIA Regulations, as published by the Department of Environmental Affairs (DEA) in Government Notice (GN) 326 on 07 April 2017. Table 2-1 lists the scoping objectives from GN 326 and provides a reference to the applicable chapter of this document where each objective is addressed.

Table 2-1

Item	Description of Scoping Objectives	Reference
I.	The objective of the scoping process is to, through a consultative process-	Chapter 2: Objectives Chapter 11: Public Participation Process
(a)	Identify the relevant policies and legislation relevant to the activities	Chapter 7: Legislative Context
(b)	Motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred Location.	Chapter 8: Project Need and Desirability
(c)	Identify and confirm the preferred activity and technology alternative through an identification of impacts and risks and ranking process of such impacts and risks.	Chapter 6: Project Description Chapter 9: Alternatives
(d)	Identify and confirm the preferred site, through a detailed site selection process, which includes an identification of impacts and risks inclusive of identification of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment.	Chapter 5: Project Location Chapter 10: Environmental Attributes
(e)	Identify the key issues to be addressed in the assessment phase.	Chapter 12.: Issues
(f)	Agree on the level of assessment to be undertaken, 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	Chapter 13: Assessment Methodology Chapter 15: Plan of Study for EIA

Item	Description of Scoping Objectives	Reference
	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.	
(g)	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	Chapter 14: Preliminary Assessment

Source: Appendix 2 of GN 326 (DEA, 07 April 2017)

2.1. Phases

The lifecycle of the project will mainly involve three phases that will take place: -

1. **Application Phase:** This involves completion of information in an application form for submission to the environmental authority, namely the provincial Gauteng Department of Agriculture and Rural Development (GDARD) and subsequent relevant authorities
2. **Scoping Phase:** This stage involves the identification of environmental issues and concerns that are associated with the project. These issues then need to be investigated in the impact assessment. Issues and concerns are identified through consultation with the authorities, interested and affected parties (I&APs) and specialists. In addition, the project team will also identify issues based on their experience on similar projects undertaken.

The purpose of scoping serves three (3) key important issues: -

- To determine the scope of work for the EIA, namely the issues and alternatives that need to be investigated and assessed.
- To initiate a public participation process to inform I&AP's about the project and to obtain their input on issues and concerns that they may have about the project.

- To identify, based on existing information, whether potential environmental impacts can be avoided or minimised through making changes to the project design.
3. **Environmental Impact Assessment Phase:** This is the stage where issues and concerns are investigated to determine their significance. In general, this involves the undertaking of a number of specialist studies – a specialist study is undertaken for each issue that needs further investigation. Both the significance of environmental impacts and measures to avoid or minimise these (i.e. mitigation measures) are investigated in the EIA. There will be an ongoing public participation, in order to feedback findings to I&APs. The EIA culminates in the submission of an **EIA Report** (including a **Draft Environmental Management Plan Report (EMPr)** to the competent authority for decision-making

There are **three other studies** that will be required which will form part of the EIA process as well. From an EIA perspective, these will serve as specialist studies. They are as follows:

- **The MHI study:** Given the nature of the project, it will be necessary to undertake a risk assessment as required by the Major Hazard Installation (MHI) Regulations as promulgated under the Occupational Health & Safety Act (Act 85 of 1993) preceded by the Emergency plan.
- **The HIA study:** The size of the property is such that it is necessary to determine whether a Heritage Impact Assessment (HIA) is required. A Notification of the Intention to Develop is required for any site that is 0.5ha or more in size in terms of the National Heritage Resources Act (Act 25 of 1999).
- The National Environmental Management Biodiversity Act (Act 10 of 2004), the National Water Act (Act 36 of 1998) and the Noise Control Regulations published under the Environmental Conservation Act (Act No. 73 of 1989) are also considered relevant to the application. While authorisations may not required in terms of these statutes, they need to be considered in the context of the project's impacts on **biodiversity, water resources and noise respectively**.
- Lastly the **Traffic Impact Assessment – which is** completed which has determined the cumulative impact of the traffic for the project of this nature and further investigated the traffic impact on the road network to determine whether there is a need to implement any roads or

intersection improvements to mitigate and accommodate the anticipated (background traffic, future background traffic, proposed development traffic and latent rights traffic volumes).

3. Report Content

The legislated requirements for the content of a Scoping Report are specified in Appendix 2 of the Amendments to the 2014 EIA Regulations (GN 326, 07 April 2017).

Table 3-1 lists the content requirements from GN 326 and provides a reference to the applicable chapter of this document where the specified information is provided.

Table 3-1 Legislated Requirements for the Content of a Scoping Report

	Content Requirements (Appendix 2 of GN 326, 07 April 2017)	Reference in this Document
2(1)	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, and must include—	Chapter 3: Report Content
(a)	details of — (i) The EAP who prepared the report. (ii) The expertise of the EAP, including a curriculum vitae.	Chapter 4: The Environmental Assessment Practitioner
(b)	the location of the activity, including— (i) The 21 digit Surveyor General code of Each cadastral land parcel. (ii) Where available, the physical address and farm name. (iii) Where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties.	Chapter 5: Project Location
(c)	A plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is— (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) On land where the property has not been defined, the coordinates within which the activity is to be undertaken.	Figure 1-1: Locality Map Figure 5-1: AC's Allocated ERF 198 Figure 6-4: Project Layout Plan

	Content Requirements (Appendix 2 of GN 326, 07 April 2017)	Reference in this Document
(d)	A description of the scope of the proposed activity, including— (i) All listed and specified activities triggered. (ii) A description of the activities to be undertaken, including associated structures and infrastructure.	Chapter 6: Project Description Applicable to NEMA Listed Activities
(e)	A description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process.	Chapter 7: Legislative Context
(f)	A motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location	Chapter 8: Project Need and Desirability
(g)	A full description of the process followed to reach the proposed preferred activity, site and location of the development footprint within the site, including - (i) details of all the alternatives considered; (ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) 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; (iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects	Chapter 9: Alternatives Chapter 11: Public Participation Process Chapter 12: Issues Chapter 10: Environmental Attributes
	(v) the impacts and risks which have informed the identification of Each alternative, including the nature, significance, consequence, extent, duration and probability of such identified impacts, including the degree to which these impacts—	Chapter 14: Preliminary Assessment Chapter 13: Assessment Methodology

	Content Requirements (Appendix 2 of GN 326, 07 April 2017)	Reference in this Document
	<p>(aa) can be reversed.</p> <p>(bb) may cause irreplaceable loss of resources.</p> <p>(cc) can be avoided, managed or mitigated.</p> <p>(vi) the methodology used in identifying and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives.</p> <p>(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects.</p> <p>(viii) the possible mitigation measures that could be applied and level of residual risk.</p> <p>(ix) the outcome of the site selection matrix.</p> <p>(x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such.</p> <p>(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity.</p>	<p>Chapter 14: Preliminary Assessment</p> <p>Chapter 14: Preliminary Assessment</p> <p>Chapter 14: Preliminary Assessment</p> <p>Chapter 9: Alternatives</p> <p>Chapter 14: Preliminary Assessment</p>
(h)	<p>(A plan of study for undertaking the environmental impact assessment process to be undertaken, including—</p> <p>(i) A description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity.</p> <p>(ii) A description of the aspects to be assessed as part of the environmental impact assessment process.</p> <p>(iii) Aspects to be assessed by specialists.</p> <p>(iv) A description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists.</p> <p>(v) A description of the proposed method of assessing duration and significance.</p>	<p>Chapter 15: Plan of Study for EIA</p>

	Content Requirements (Appendix 2 of GN 326, 07 April 2017)	Reference in this Document
	<p>(vi) An indication of the stages at which the competent authority will be consulted.</p> <p>(vii) Particulars of the public participation process that will be conducted during the environmental impact assessment process.</p> <p>(viii) A description of the tasks that will be undertaken as part of the environmental impact assessment process.</p> <p>(ix) Identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.</p>	
(I)	<p>An undertaking under oath or affirmation by the EAP in relation to—</p> <p>(i) The correctness of the information provided in the report.</p> <p>(ii) The inclusion of comments and inputs from stakeholders and interested and affected parties.</p> <p>(iii) Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties.</p>	Chapter 16: EAP Affirmation
(J)	<p>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.</p>	Chapter 16: EAP Affirmation
(K)	<p>Where applicable, any specific information required by the competent authority.</p>	Chapter 17: Other Requirements
(L)	<p>any other matter required in terms of section 24(4)(a) and (b) of the Act</p>	Chapter 17: Other Requirements
	<p>(2) Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a scoping report, the requirements as indicated in such notice will apply.</p>	Chapter 17: Other Requirements

4. The Environmental Assessment Practitioner

In accordance with Item 2. (1) (a) in Appendix 2 of GN 326, this chapter provides details of:

- (i) The Environmental Assessment Practitioner (EAP) who prepared this report.
- (ii) The expertise of the EAP.

4.1. Batach Holdings Pty Ltd South Africa

Batach Holdings (South Africa) was established in South Africa in 2014 and was incorporated in 2016 and has expanded over the years. The company now employs approximately 14 professional staff operating in four (4) provinces in South Africa. Batach Holdings offers expertise in a wide range of environmental management, Health and Safety, Project and Programme management as well as rigorous built environment disciplines whilst implementing quality assurance standards in accordance with Batach Holdings (ISO) 9001 accreditation.

Batach Holdings independence is ensured by the fact that it is strictly an organisation, not holding equity in any project; its ownership is primarily by staff. Batach Environment senior technical staff also maintain independent accreditation with the relevant professional accreditation bodies. This permits its consultants to provide clients with conflict-free and objectively support on crucial issues.

Batach Holdings fee for completing this report is based on its normal professional daily rates plus reimbursement of incidental expenses. The payment of that professional fee is not contingent upon the outcome of the report. Batach Holdings, Gauteng's Environmental Team has been practicing in Gauteng since inception and has a distinguished track-record of managing a diverse range of large and complex projects.

4.2. Details of the EAP

The EAP for this application is Mr Lucky Msimanga, Lead Environmental Scientist at Batach Environment. Pertinent information relating to the expertise of the EAP is summarised below:

The EAP holds:

- Master's Degree in Environmental Science (2009) from the University of Sydney (Australia).
- Honours in Natural Science – University of Durban Westville (UKZN) (1999)
- Project and Programme Management (University of Pretoria)
- EIA (Water Law, Legal Principles, Biodiversity, Environmental Planning) Potchefstroom University - 2016

- 11 years of experience in the field of environmental management.
- 14 combined years of experience in Contracts, Project and Programme Management
- Specialises in environmental assessments, environmental auditing and integrated environmental licencing for the industrial, waste management and mining sectors.
- A registered professional member of IAIA International
- For further details, refer to the EAP curriculum vitae (CV)

Contact details for the EAP are provided below:

Name: Lucky Msimanga

Contacts: +27 61 356 8423

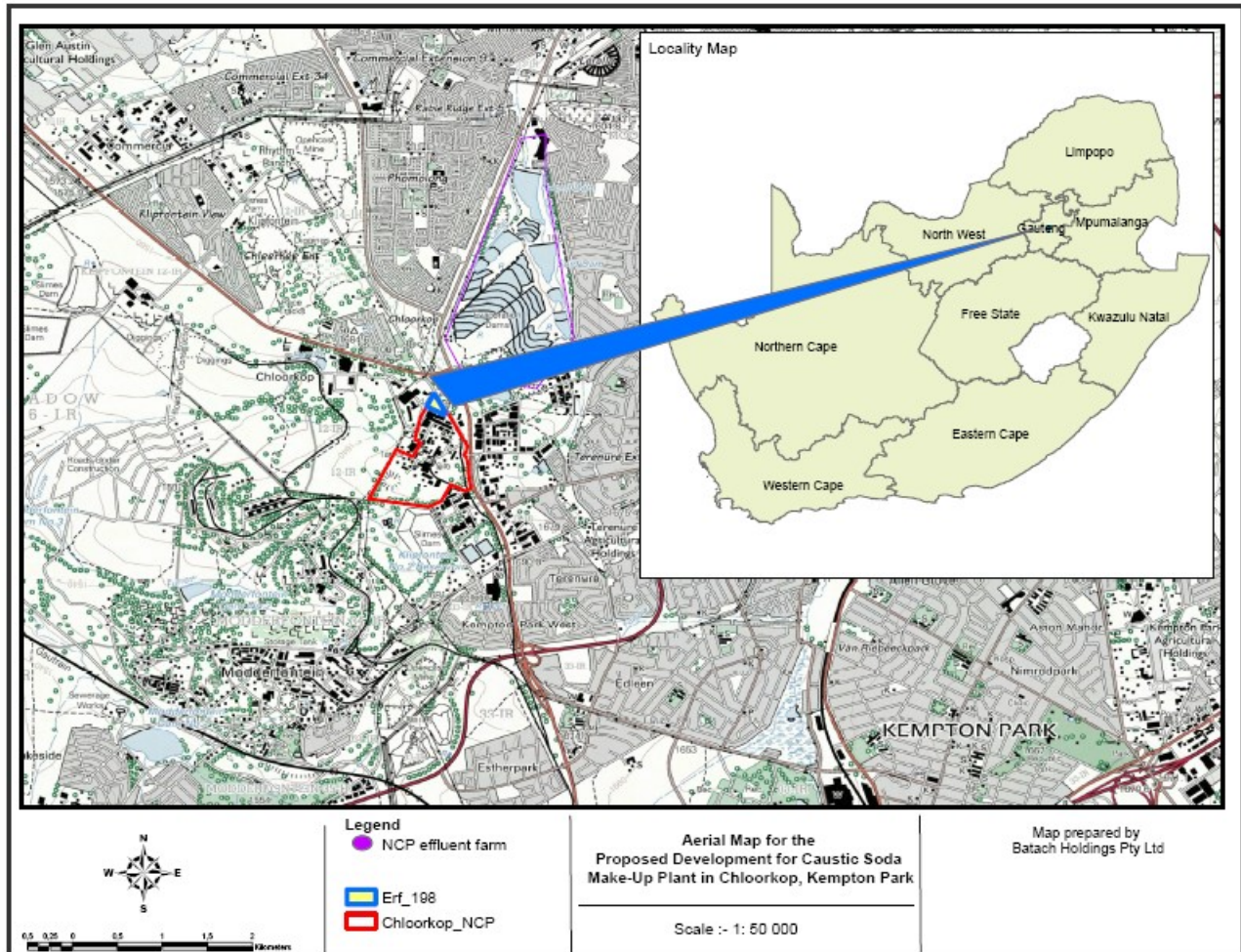
Email: Lucky@batach.co.za

Fax: 086 679 6758

5. Project Location

In accordance with Items 2.(1)(b) and 2.(1)(c) in Appendix 2 of GN 326, this chapter provides details of the location of the proposed project, including:

- (i) The 21-digit Surveyor General (SG) code of Each cadastral land parcel (**Table 5**)
- (ii) The physical address and property name (refer to the box below).
- (iii) Geographical coordinates for the site (**Table 5-2**).
- (iv) A plan which locates the proposed activities applied for at an appropriate scale (**Figure 5-1, Figure 5-2 and Figure 6-4**).



5.1. Description of the Site

The proposal entails construction and operation of caustic soda (known as sodium hydroxide) make-up plant. The proposed construction and operation will be situated at ERF **198 of Chloorkop-IR**. It is located on the north-eastern boundary tip of the NCP Chlorchem Properties, Chloorkop, South Africa. The route access to the site is via a well-maintained public tar road (Ossewa Street) that turns off from the motorway M39 (Zuurfontein Road). The address being No 1 Hytor Street, Chloorkop, Kempton Park, Gauteng Province – Ekurhuleni Metro – South Africa

The proposed development aims to operate autonomously with its own proposed two entrances, security access, weighbridge, warehouse, and production facility banded tank farm and staff quarters. The proposed caustic make up involves the dissolution storage and loading of approximately 5000 tonnes (LMT) of caustic soda per month at 45-50 desired caustic solution concentration on the site, which measures 1,875867 square meters (m²) which is 1.8 hectares in extent. African Chemicals wishes to import dry caustic which will be distributed to the newly proposed facility in Johannesburg where it will be dissolved into lye form and thereafter loaded to customer tanker trucks.

In Africa, solid caustic soda is normally delivered from 25 kg up to 1250 kg of bags on pallets in 20-foot or 40-foot containers. Most solid caustic soda (DMT) imported from the Middle East, India and China, while liquid caustic soda (LMT) imported from Europe, the US and the Middle East, Liquid caustic soda imported in tankers. The typical caustic soda cargo size is approximately 3,000-5,000 (Dry Metric tonnes) DMT/shipment and this is also the case in northwest Europe for exports. The African Chemicals proposed plant will be the fifth (5th) largest source of caustic soda in Southern Africa and will service inland consumers and SADC countries (ICIS: 2015).

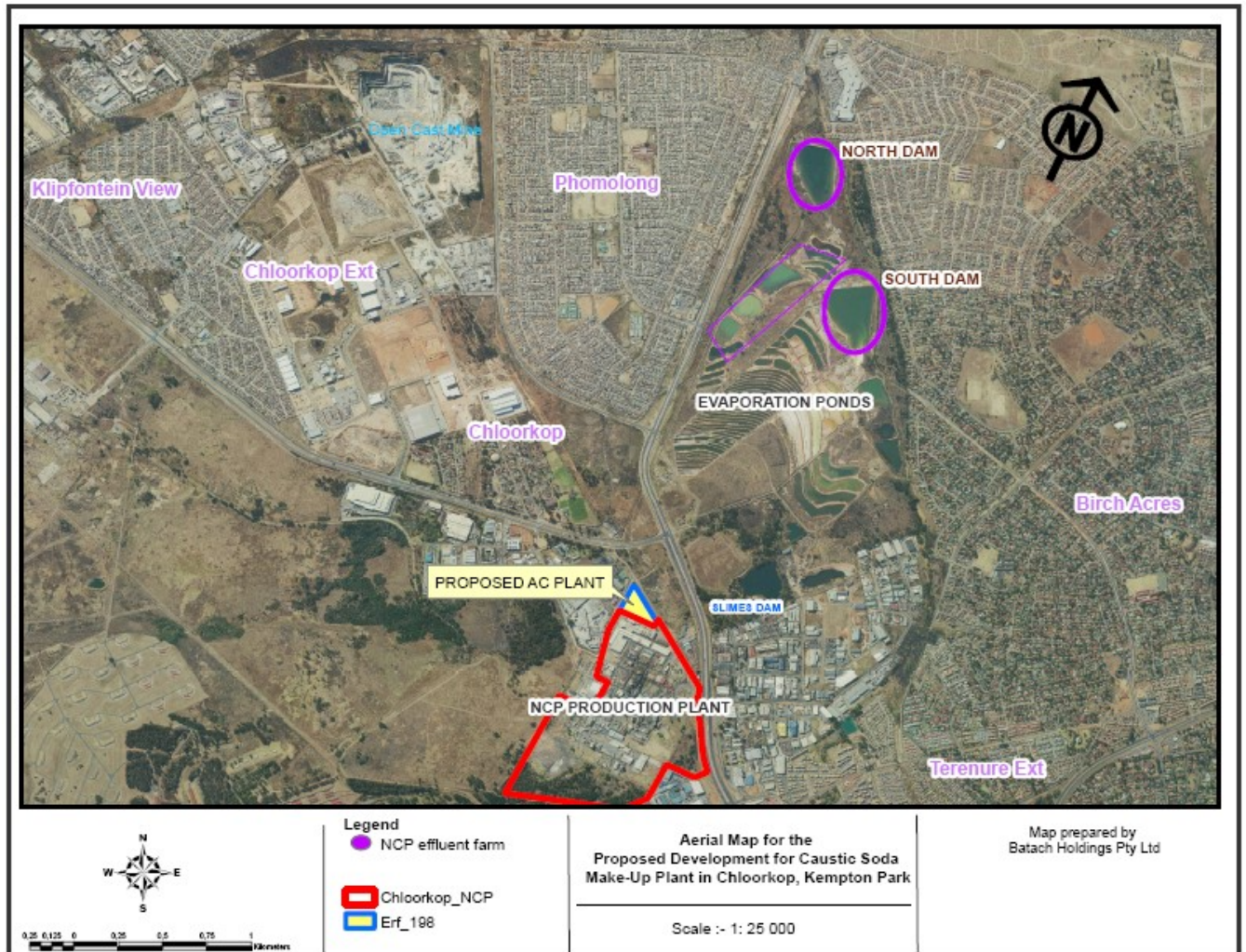
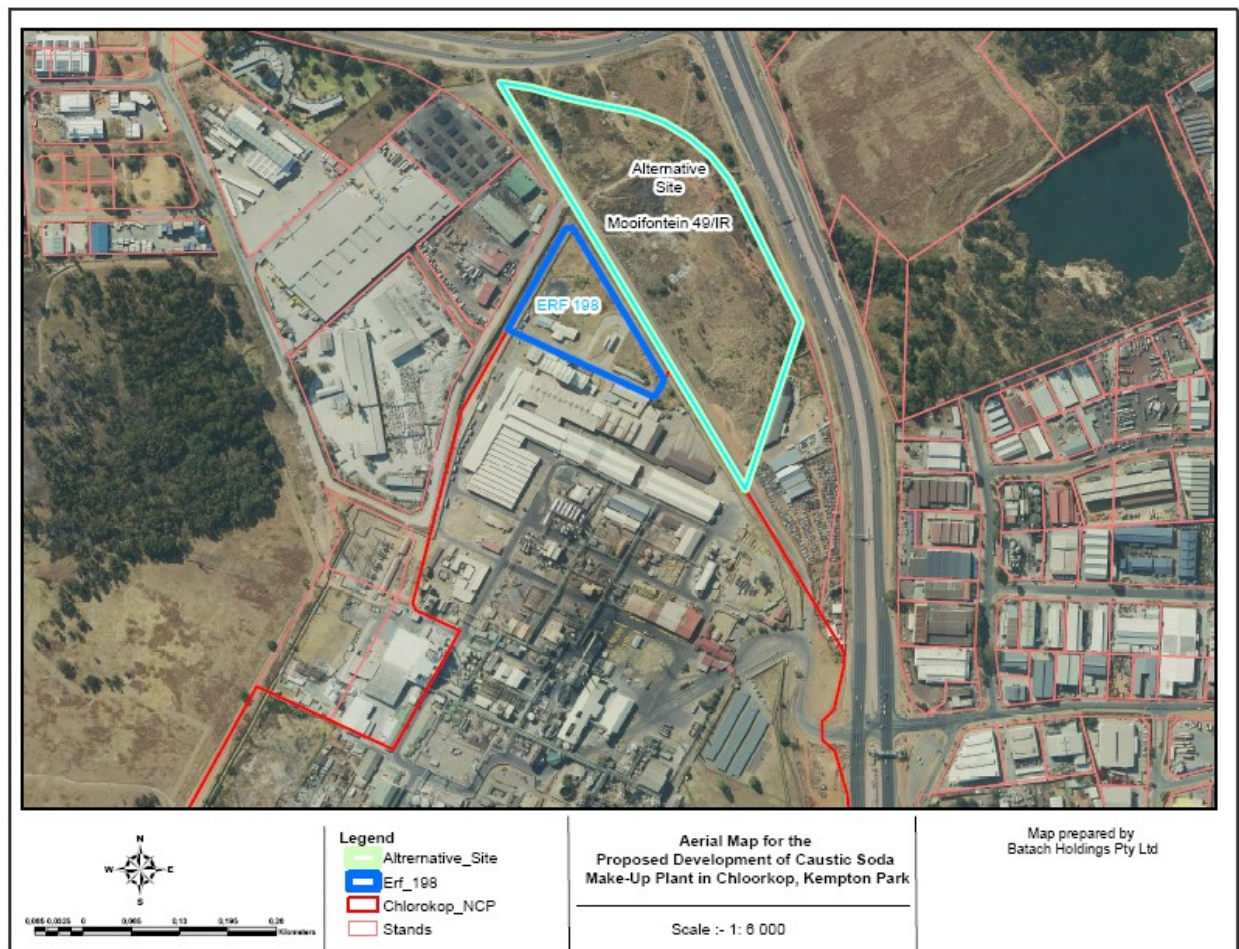
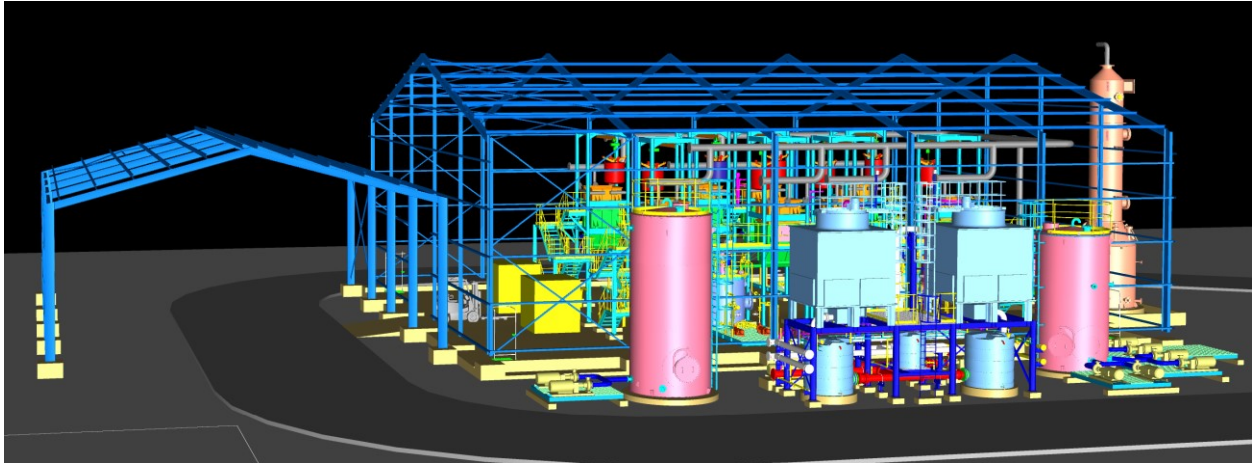


Fig 5.1: Orientation Map:

5.2. FEATURES and Site

- The plant new proposed construction infrastructure will entail - weighbridge, warehouse, production facility, bunded tank farm and 2 proposed entrances to the site
- The plant is designed to be fully automated and the make-up tank will be fed through weigh feeders which will ensure consistent product quality.
- Online product analysers will be installed and display product quality in real time.
- The caustic lye will be loaded into the IBC's using the Caustic Lye IBC Loading Pump and Loading Arm. IBC tank filling stations will allow for sale of required mass for packaged product.
- The facility will be operated by approximately 52 permanent staff including warehouse personnel





3-D Model – Tank farm

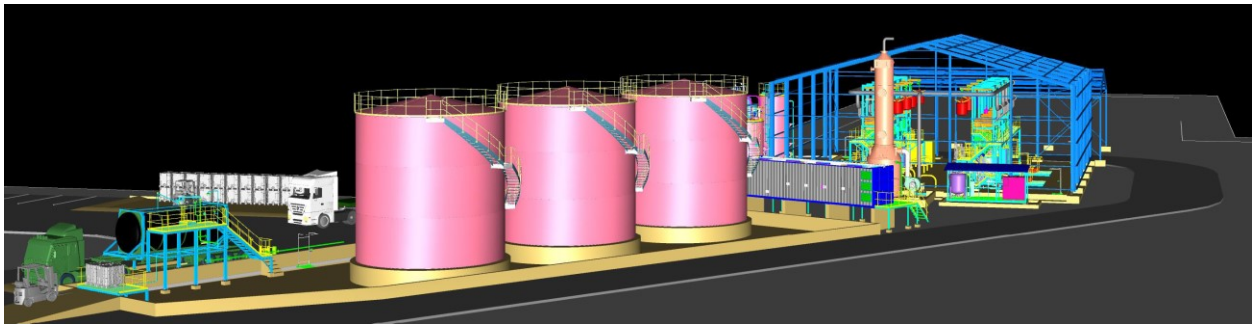
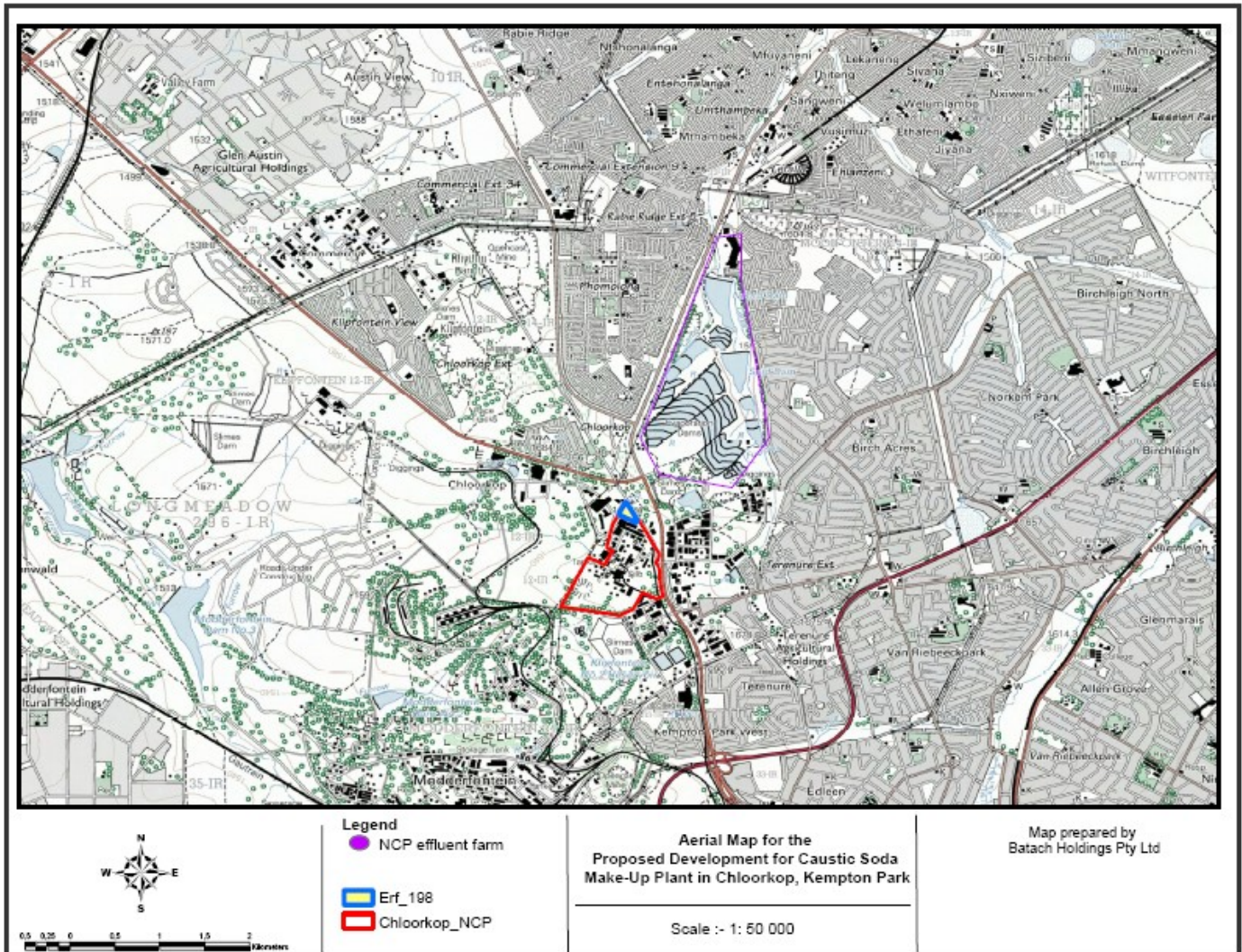


TABLE 5: SURVEYOR GENERAL CODE

Country	South Africa
Province:	Gauteng
Municipality:	Ekurhuleni Metropolitan
Town:	Kempton Park
Suburb:	Chloorkop
Zone:	Industrial I
GIS key	K570000000019800000
Erven	198
Venus Code	K57000000001980000000000000
GIS KEY	K570000000019800000
Property Description	ERF 198 of Chloorkop IR

MAP (with correct scale) 1: 50 000

Figure 5-1



6. Project Description

In accordance with Item 2(1) (d) (ii) in Appendix 2 of GN 326, this chapter provides a description of the proposed activities, including associated structures & infrastructure.

- AFRICAN Chemicals (AC) proposes to construct and operate a Caustic-Make-up plant which will entail the plant new proposed infrastructure - weighbridge, warehouse, production facility, tank farm and 2 proposed entrances to the site
- The plant is designed to be fully automated and the make-up tank will be fed through weigh feeders which will ensure consistent product quality.
- The proposed construction and operation will be situated at ERF No 198 of Chloorkop-IR, within the City of Ekurhuleni metropolitan in Gauteng Province. African Chemicals wishes to import dry caustic, transport it to the newly proposed facility where it can be dissolved into lye form and loaded into customer tanker trucks.

The company has decided to import the product in solid form, transport it by road to Johannesburg, and dissolve it back into lye form before placing the product into the market. The dissolution of Caustic Soda is hazardous because of an exothermic chemical reaction (release of excessive heat) that takes place when the product is mixed with water. Therefore, the temperature in the dissolution vessel needs to be controlled using a suitable cooling system (AC, 2020).

- The production of caustic lye required is estimated to be 5000 tonnes per month at 45-50% (w/w).
- The caustic flakes will be delivered in 1000 kg or 1250 kg bulk bags and stored in a warehouse
- The Caustic Lye, at a 50% w/w concentration, will be stored at 40 degrees Celsius (°C) in heated bulk storage tanks to prevent crystallization.

6.1. CAUSTIC SODA

Caustic soda (also known as sodium hydroxide) is an alkali salt that is white in solid form and clear (colorless) in liquid form. The compound is highly soluble in water and predominantly processed to form a saturated solution of ~50% concentration (lye form). In solid form, it is available as pearls as well as flakes. Caustic soda is widely used in a variety of sectors. It serves as a reactant in the production of organic chemicals and used in the making of paints, glass, ceramics and fuel cell production. Caustic soda historically, used in the manufacture of soaps and detergents and is prevalent in the pulp and paper industry for separating cellulose fibers from lignin that originate in plant material. As a strong base, it is frequently used in the neutralization of acids or simply to increase the alkalinity of a mixture. Other uses include the production of mineral oils (e.g. greases), bleaching in the textiles sector and creation of pharmaceutical compounds.

It readily absorbs moisture as well as carbon dioxide in the air. Dissolving the salt in water, results in a highly exothermic reaction (i.e. a reaction that releases heat) which, poses a safety hazard unless controlled.

Caustic soda is one of African Chemicals core products which has vast experience in its technical and commercial aspects. African Chemicals specialises in supplying caustic soda in solid flake as well as in lye form (dissolved in water) which will be according to the any customer's **desired concentration and packaging**.

6.2. APPLICABLE LEGISLATION AND POLICIES

This report has made provision to accommodate all applicable legislation, policies and guidelines. The activity entails the construction and operation of a make-up plant which have an impact in the National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended) and the National Environmental Management Air Quality Act, 2004 (Act No 39 of 2004) The Gauteng Environmental Management Framework, 2015 (GEMF, 2015) which identifies the site as Environmental Management Zone 5.

6.3. Description of the Receiving Environment

The GDARD departmental conservation plan version 3.3 denotes the site as partially transformed and without any environmental sensitivity

6.4. Why does the project require an Environmental Impact Assessment?

The project involves activities that are listed in the Government Notice 325, where a Full Scoping and Environmental Impact Reporting (S&EIR) process must be undertaken as described in the EIA Regulations to obtain the necessary environmental authorisation. The (S&EIR) process entails:

- Submit an application form
- Submission of scoping report to competent authority
- Consideration of scoping report
- Public Participation process
- Submission and consideration of environmental impact assessment reports and an EMPr
- Decision on S&EIR application

The Amendments to the 2014 EIA Regulations, as issued on 07 April 2017 in terms of NEMA, consist of the following:

- GN 326 specifies the EIA procedures to be followed.
- GN 327 provides Listing Notice 1 – activities that require a Basic Assessment (BA) process.
- GN 325 provides Listing Notice 2 – activities that require an S&EIR process.
- GN 324 provides Listing Notice 3 – activities in identified geographical areas that require a BA process.

The following listed activities have been applied for:-

6.5. Activities: GN 325 Listing Notice 2

This Listing Notice called the Environmental Impact Assessment Regulations Listing Notice 2 of 2014, which took effect on 08 December 2014. The following NEMA listed activities are included in the current application (refer to table below)

Activity 4 of GN 325: The development and related operation of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres.

The Activity in details: The development and related operation of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than **500 cubic meters**.

Activity 6 of GN 325: The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent, excluding—

- (iii) activities which are identified and included in Listing Notice 1 of 2014;
- (iv) activities which are included in the list of waste management activities published in terms of 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;
- (v) the development of facilities or infrastructure for the treatment of effluent, polluted water, wastewater or sewage where such facilities have a daily throughput capacity of 2 000 cubic metres or less; or
(iv) where the development is directly related to aquaculture facilities or infrastructure where the wastewater discharge capacity will not exceed 50 cubic metres per day

Activity 56 of GN 327 The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre—

- (iii) where the existing reserve is wider than 13,5 meters; or
- (iv) where no reserve exists, where the existing road is wider than 8 metres excluding where widening or lengthening occur inside urban areas.

Activity 7 of GN 325 The development and related operation of facilities or infrastructure for the bulk transportation of dangerous goods—

- (iv) in gas form, outside an industrial complex, using pipelines, exceeding 1 000 metres in length, with a throughput capacity of more than 700 tons per day
- (v) in liquid form, outside an industrial complex, using pipelines, exceeding 1 000 metres in length, with a throughput capacity of more than 50 cubic metres per day; or

In solid form, outside an industrial complex, using funiculars or conveyors with a throughput capacity of more than 50 tons per day.

The NEMA listed activities as described herewith and clearly identified in **Table 7.4 below** will be triggered by the development and operation of the proposed caustic soda plant, will subsequently require environmental authorisation. As activities from Listing Notice 2 are triggered, an S&EIR process is being undertaken

6.6. AFRICAN CHEMICALS

AFRICAN Chemicals (AC) proposes to construct and operate a Caustic-Make-up plant on ERF 198 Chloorkop in Kempton Park, Gauteng. It is proposed to have its own slip road, security access, weighbridge, warehouse, production facility, tank farm, staff and technology. African Chemicals wishes to import dry caustic, transport it to the newly proposed facility in Johannesburg, Chloorkop where it can be dissolved into lye form and loaded into customer tanker trucks or IBC containers. The dissolution, storage and loading all form part of the **Caustic Make-up Plant**.

AFRICAN Chemicals (AC) was founded in 2014 and after two years of preparation and structuring it was incorporated in 2016. AFRICAN Chemicals (AC) is an established Qualifying Small Enterprise - as defined in the Broad Based Black Economic Empowerment Codes of Good Practice of 2016 - in the cleaning and industrial chemicals manufacturing sector. As a South African based bulk chemicals production, marketing and distribution which is focused on supplying products and services to the African market. AC currently distributes chemicals in the mining sector as well as market in the DRC and provides solutions within Southern Africa.

This specifically pertains to satisfying African customers with their needs within proximity, increasing employment and containing flow of funds within the domestic economy. The company is fully black owned, which has earned it Black Economic Empowerment (BEE) Level I accreditation - BEE is a South African legislation aimed at redressing inequalities caused by Apartheid.

6.4.1 African Chemicals (AC) core business

At the core of the AC strategy, "is supplying bulk chemicals solutions through the use of innovation in inbound sourcing, production, logistics, technology and after-sales service" (AC, 2016). The vision of African Chemicals, aims to empower African industrial consumers with quality chemical products and services in a manner that reduces and optimizes their total costs. This specifically pertains to satisfying African customers with their needs within proximity, **increasing employment** and containing flow of funds within the respective domestic economy

6.7. PROJECT MOTIVATION

The sub-sections below provide further information in terms of the design specifications.

6.8. Scope of Facilities and Process description

The project scope includes the supply and installation of a new caustic offloading, dissolution, storage and dispatch facility. Utility areas such as instrument air, dust scrubbing, demin water, cooling water and hot water storage and distribution are also included. A containerised MCC and control room, to supply power to, and control equipment within the caustic make-up plant, will also form part of the technology partner (ProProcess) scope of supply. The Plant layout design as indicated below summarizes the Scope of facilities and area of operation.

6.6.1 Battery Limits

The following battery limits apply to the Caustic Make-up Plant project:

6.6.2 Process

- In:** Caustic flakes in 1-ton bulk bags
Demin water supply (from New RO Plant to be installed)
Potable water supply (from the water authority)
- Out:** Caustic lye tanker load-out
Caustic lye IBC load-out
Boiler feed water return

6.7 STRUCTURAL Process Description

The Plant layout designs below are categorised from Area 200 up to Area 1160 below, (6.8 Diagram below) indicate the supply and installation of new structures and skids for all areas, including the: Process area, shed (to house the caustic lye debagging and dissolution area). Offloading area cover (joining area 100 to area 200/300) (See the Layout section 6.8 below)

6.7.1 Area 200: Caustic Flakes Debagging

There will be two debagging systems per train. The two debagging systems will operate alternately to allow for continuous debagging of the caustic flakes and feed to the dissolution tanks, i.e. while one is in operation the other is being prepared to continue debagging once the first debagging sequence is done.

The caustic flakes will be delivered in 1000 kg or 1250 kg bulk bags and stored in a warehouse. The bulk bags are transported by a forklift from the warehouse and positioned into the Bag Conditioner. The bulk bags are conditioned to break up large lumps of flakes that formed during transportation and storage. There are two Bag Conditioners for the four debagging trains.

The conditioned bulk bag will be transferred by a forklift from the Bag Conditioner to the Caustic Bulk Bag Hoists. The bulk bag is fixed to one of the two Hoist Lifting Cradles. The operator uses a hand-held pendant to lift the bulk bag with the Caustic Bulk Bag Hoist and positions it above the Bag Breaker. The operator will then lower the bag onto the Bag Breaker, which cuts the bag and empties the contents into the Caustic Weigh Hopper.

The Caustic Lump Breaker, situated inside the hopper, will keep the caustic flakes mobile and break up larger lumps which may be present. The Caustic Weigh Hopper is situated on top of four load cells, which will record the weight of debagged caustic flakes. The Caustic Metering Screw Feeders are on VSD so that rate of the caustic flakes fed to the Dissolution Tanks can be controlled. This is done for ratio control of the caustic flakes and demin water to achieve the desired caustic solution concentration (45-50%).

6.7.2 Area 300: Caustic Dissolution

The caustic flakes will then be mixed with a calculated amount of water, based on the weight of caustic flakes added, in the Caustic Dissolution Tank. The caustic flakes and water in the Caustic Dissolution Tank are mixed by the Caustic Dissolution Tank Agitator, to ensure homogenous dissolution. The caustic flakes dissolution is exothermic, causing heat generation during dissolution. The Caustic Dissolution Tank Fan draws out the hot water vapours that form in the Caustic Dissolution Tank due to the heat of dissolution. Removing the water vapour which allows dry air to be pulled through the Caustic Metering Screw Feeder opening. This prevents the caustic solids in the Caustic Metering Screw Feeder from getting wet, preventing blockages. The excess heat is removed by circulating the liquid caustic solution (caustic lye) through an external plate heat exchanger, the Caustic Dissolution Cooler, to maintain a temperature in the Caustic Dissolution Tank of 120 °C.

The heat will be removed by hot water from the Energy Recovery Circuit. Once dissolved the caustic lye is transferred from the Caustic Dissolution Tank through a plate heat exchanger, the Caustic Lye Cooler, which will cool down the caustic lye, using cooling water from the Cooling Water Circuit, to 60 °C. From the Caustic Lye Cooler, the caustic lye product is transferred to the Caustic Lye Storage area. The caustic lye product is passed through a Coriolis flowmeter before the storage area to measure the mass flow and concentration, using the caustic lye density as described further below. All piping containing caustic lye is lagged and Heat Traced to prevent the caustic lye's temperature from falling below the temperature at which the caustic will crystallise.

6.7.3 Area 400: Caustic Lye Storage

The caustic lye product is transferred by the Caustic Lye Transfer Pump into one of three Caustic Lye Storage Tanks. The temperature in the Caustic Lye Storage Tank is maintained by a Heating Bayonet Coil at 40 °C. This prevents the caustic from crystallising. An automated open/close valve is used as protection from overfilling the storage tank by selecting which storage tank is being filled. The automated valve will open allowing the caustic lye to be transferred into the next storage tank, when one of the storage tanks is full.

6.7.4 Area 500: Caustic Lye Load-Out

The caustic lye will then be loaded from the Caustic Lye Storage Tanks into either IBC's or a caustic lye tanker truck. The caustic lye is loaded into the IBC s using the Caustic Lye IBC Loading Pump and Loading Arm. Once the target mass of caustic lye has been added to the IBC, as measured by load cells under the IBC, the loading is stopped. Similarly, for the tanker truck loading, the caustic lye is loaded into the tanker truck using the Caustic Lye Loading Pump and Loading Arm. Once the flow-meter after the Caustic Lye Loading Pump has registered that the target mass has been transferred, the loading is stopped.

6.7.5 Area I130: Energy Recovery Circuit

Hot water from the Energy Recovery Circuit will be used for cooling of the Caustic Dissolution Tank and heat recovery. For the dissolution cooling, hot water from the Hot Water Storage Tank is circulated through the Caustic Dissolution Cooler by the Hot Water Supply Pumps, thereby removing excess heat evolved during the dissolution. Heating of the Caustic Lye Storage Tanks is done by circulating the hot water at 90 °C through the Heating Bayonet Coils using the Caustic Lye Storage Hot Water Pumps. The temperature in the Hot Water Storage Tank is maintained by circulating the hot water through external plate heat exchangers, using the Hot Water Circulation Pumps. The heat from the hot water is removed in the Boiler Feed Water Heaters. The Boiler Feed Water Heaters use the heat from the hot water in the Energy Recovery Circuit to increase the temperature of boiler feed water from demin water supply feeding NCP from 60°C to 80 °C. Any excess heat not removed by the boiler feed water is removed by cooling water from the Cooling Water Circuit in the Hot Water Heaters.

6.7.6 Area I110: Demin Water Storage and Distribution

The Demineralised Water Storage Tank is topped up with demin water from the New RO Plant supply. An automated open or closed valve will control the demin water top up as described below in more detail. The demin water is supplied to the other areas from a header at a regulated pressure, which ensures all distribution points have the same pressure. The header returns to the Demin Water Storage Tank.

6.7.7 Area I120: Cooling Water Circuit

Cooling water from the Cooling Water Circuit is used to remove excess heat from the Caustic Dissolution area and from the Energy Recovery Circuit as described above. The temperature of the cooling water is maintained by removing heat in the Cooling Towers. Cooling water is supplied to other

areas by the Cooling Water Pumps before returning to the Cooling Towers after removal of heat from the other areas.

6.7.8 Area I140: Caustic Dust Extraction

The plant is propose to be a zero effluent. The Caustic Scrubber Fan into the Caustic Scrubber will extract the dust that is created during the caustic flakes debagging. Demin water is added as scrub liquor in the Caustic Scrubber. The Caustic Scrubber Recirculation Pump circulates the scrub liquor through sprays in the Caustic Scrubber. A bleed from the circulation removes excess caustic solution to the Caustic Dissolution Tank once a high level is detected in the Caustic Scrubber. Normal operation is for the bleed to be to be directed to the first train Caustic Dissolution Tank, however manual valves can be used to direct the bleed to any of the Caustic Dissolution trains.

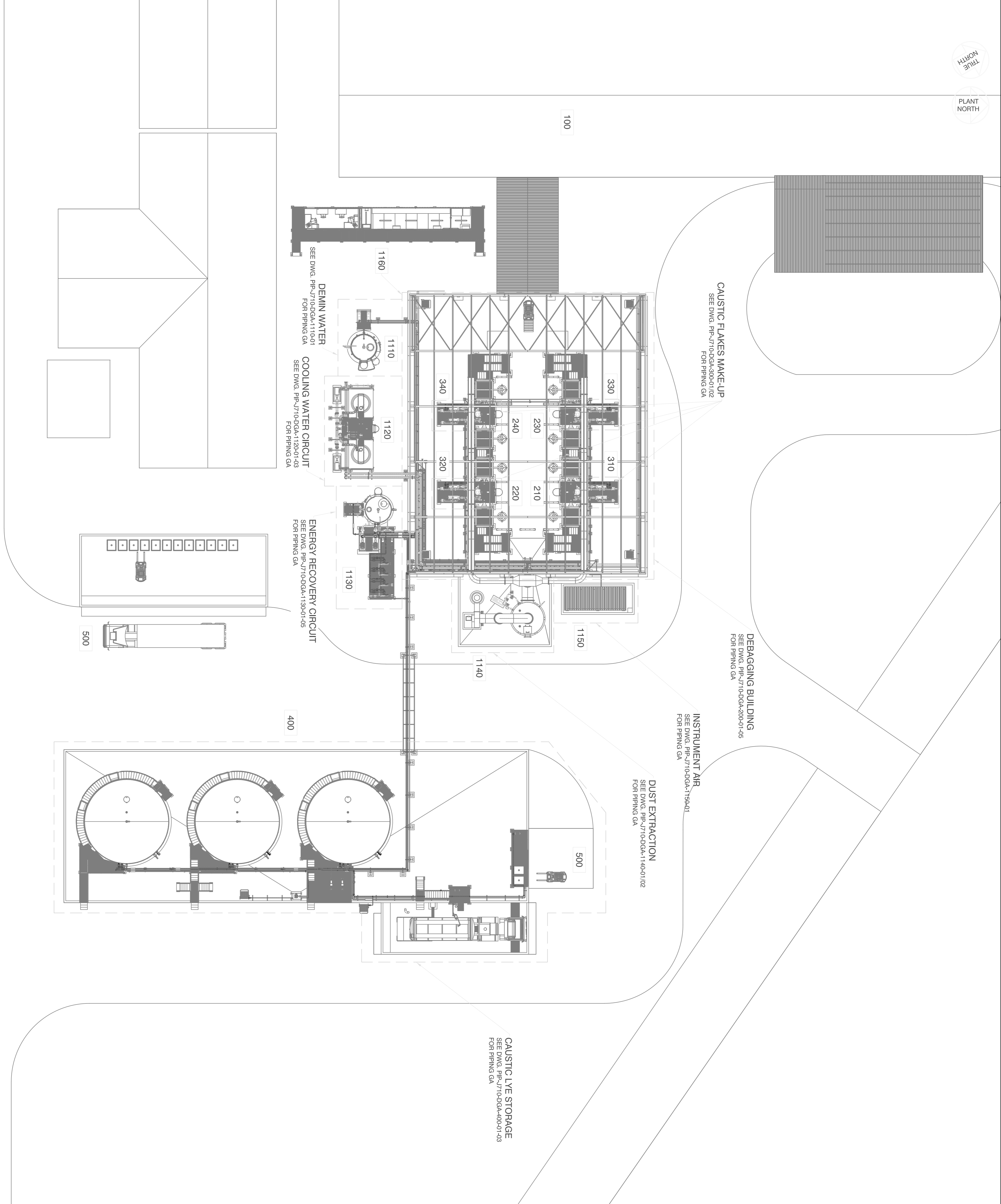
6.7.9 Area I150: Utilities Instrument Air

Instrument air will be generated by a screw compressor and stored in an air receiver at 6 Bar. The air receiver is a 2m³, vertical tank complete with safety relief valves. From the air receiver, the air moves through a desiccant dryer and dust filters, ensuring clean, dry air is supplied to the plant. This air moves through the instrument air supply header to areas 310, 320, 330, 340, 400, I110 and I130 where air distribution headers distribute the air to the relevant instruments.

6.7.10 Area I160: Utilities – Potable Water Circuit

The potable water circuit will tie-in to the local water authority in the area, to supply point and distribute potable water to various areas throughout the plant. A flow meter will be fitted near the tie-in point to measure the supplied potable water used by the process plant. It is also worth noting that the plant produces zero effluent.

6.8 PLANT LAYOUT DESIGN



PLANT LAYOUT

AREA	SUB-AREA	DESCRIPTION
000	SITE INFRASTRUCTURE	
100	WAREHOUSE	
200	SOLIDS HANDLING	
210	TRAIN 1	
220	TRAIN 2	
230	TRAIN 3	
240	TRAIN 4	
300	CAUSTIC DISSOLUTION	
310	TRAIN 1	
320	TRAIN 2	
330	TRAIN 3	
340	TRAIN 4	
400	CAUSTIC LYE STORAGE	
500	CAUSTIC LYE LOAD-OUT	
1100	SERVICES AND UTILITIES	
1110	DEMIN WATER	
1120	COOLING WATER	
1130	ENERGY RECOVERY SYSTEM	
1140	CAUSTIC DUST EXTRACTION	
1150	INSTRUMENT AIR SYSTEM	
1160	POTABLE WATER	

PRELIMINARY

JOB No. / PACKAGE No.:	CLIENT INFO	INTERNAL INFO
PURCHASE ORDER No.:		
QUANTITY REQUIRED.:		
DOCUMENT NUMBER.:		

REV.	DATE	DESCRIPTION	BY	CHKD	APPR.
B.2	2021-01-11	ISSUED FOR CLIENT COMMENT	NF		
B.1	2020-04-22	ISSUED FOR CLIENT COMMENT	NF	PDP	SBB
A.1	2020-04-17	ISSUED FOR INTERNAL COMMENT	NF	PDP	SBB

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DESIGNED, DRAWN AND ISSUED BY PROPROCESS PROFESSIONAL ENG. / TECH.:

ECOSA REG. NO.:

CLIENT: **AFRICAN CHEMICALS**

PROJECT: **J710 - CAUSTIC MAKE-UP PLANT**

AREA: **AREA 000 INTERPLANT**

PROCESS: **PIPING PLANT LAYOUT - NEW CONCEPT**

SCALE: **A1**

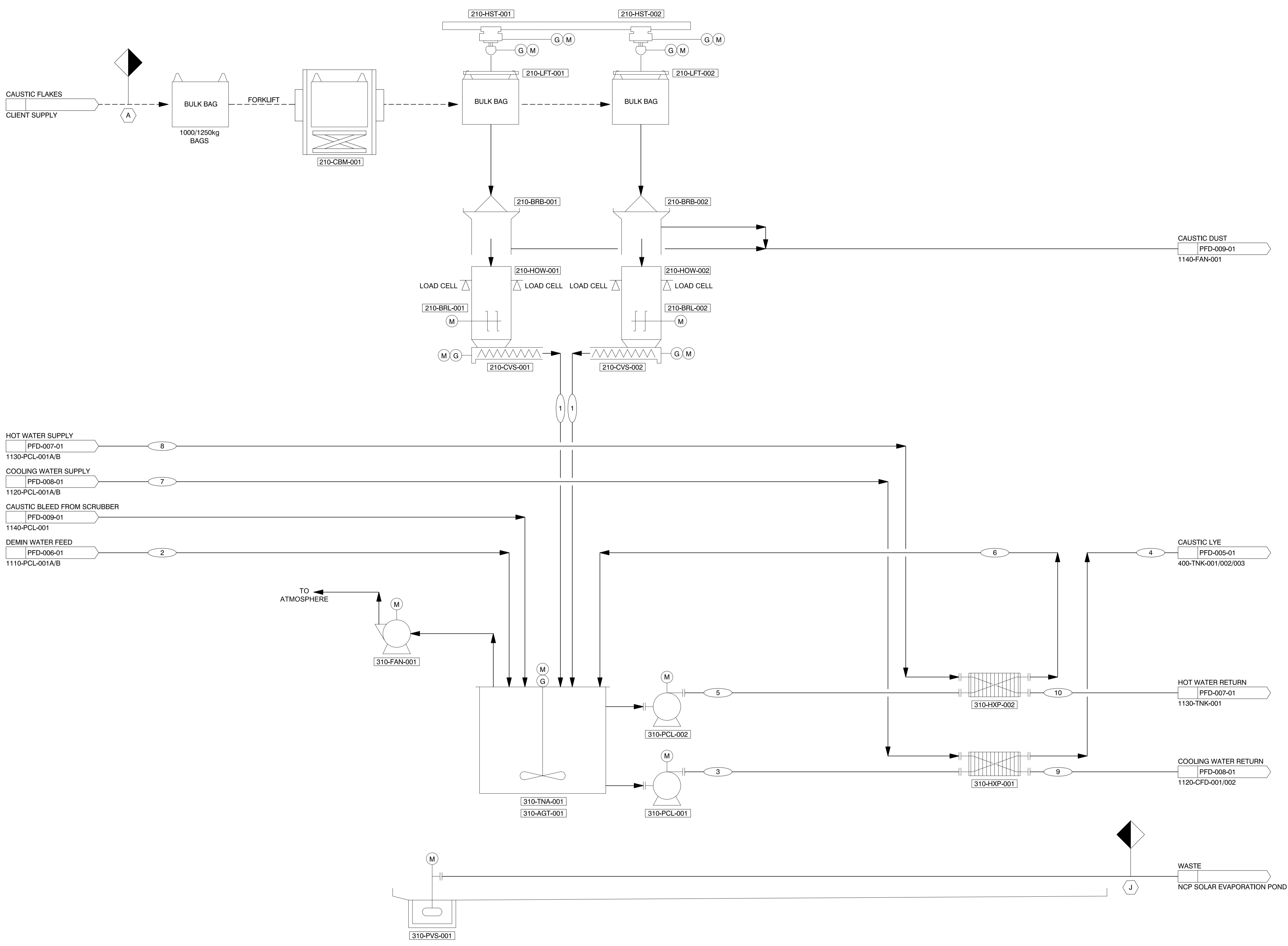
PROJECT NUMBER: **110942-HDR-PIP-J710-DGA-000-01**

CLIENT: **AFRICAN CHEMICALS**

DATE: **11 January 2021 17:01:36**

MK	QTY.	TYPE	RESPONSIBILITY	DESCRIPTION
A	1	BULK BAGS	CLIENT	CAUSTIC FLAKES
J	1	ASME B16.5 CL150	CLIENT	WASTE TO NCP EVAPORATION POND

EQUIPMENT No.	QTY	DESCRIPTION	kW
210-BRB-001	1	CAUSTIC BAG BREAKER	-
210-BRB-002	1	CAUSTIC BAG BREAKER	-
210-BRL-001	1	CAUSTIC LUMP BREAKER	TBC
210-BRL-002	1	CAUSTIC LUMP BREAKER	TBC
210-CBM-001	1	CAUSTIC BAG CONDITIONER	TBC
210-CVS-001	1	CAUSTIC METERING SCREW FEEDER	TBC
210-CVS-002	1	CAUSTIC METERING SCREW FEEDER	TBC
210-HOW-001	1	CAUSTIC WEIGH HOPPER	-
210-HOW-002	1	CAUSTIC WEIGH HOPPER	-
210-HST-001	1	CAUSTIC BULK BAG HOIST	TBC
210-HST-002	1	CAUSTIC BULK BAG HOIST	TBC
210-LFT-001	1	HOIST LIFTING CRADLE	-
210-LFT-002	1	HOIST LIFTING CRADLE	-
310-AGT-001	1	CAUSTIC DISSOLUTION TANK AGITATOR	TBC
310-FAN-001	1	CAUSTIC DISSOLUTION TANK FAN	TBC
310-HXP-001	1	CAUSTIC LYE COOLER	-
310-HXP-002	1	CAUSTIC DISSOLUTION COOLER	-
310-PCL-001	1	CAUSTIC LYE TRANSFER PUMP	TBC
310-PCL-002	1	CAUSTIC DISSOLUTION COOLER PUMP	TBC
310-PVS-001	1	CAUSTIC DISSOLUTION AREA SUMP PUMP	TBC
310-TNA-001	1	CAUSTIC DISSOLUTION TANK	-



LEGEND

— NEW
 - - - VENDOR PACKAGE
 - - - CONTAINERISED / SKID

PROPROCESS OTHERS

PRELIMINARY

REV.	DATE	DESCRIPTION	BY	CHKD.	APPR.
B.1	2020-02-28	ISSUED FOR CLIENT COMMENT		NS	
A.2	2020-02-20	ISSUED FOR INTERNAL COMMENT		NS	ES SBB
A.1	2020-02-19	ISSUED FOR INTERNAL COMMENT		NS	ES SBB

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PROFESSIONAL ENG. / TECH.:

ECSA REG. NO.: REV.:

J710 - CAUSTIC MAKE-UP PLANT

AREA 200 AND 300

CAUSTIC FLAKES DEBAGGING AND MAKE-UP - TRAIN 1

PROCESS FLOW DIAGRAM

SCALE: N.T.S

SHEET: 1 OF 1

CLIENT: **AFRICAN CHEMICALS**

PROJECT NUMBER: 110942-HDR-PRO-J710-PFD-001-01

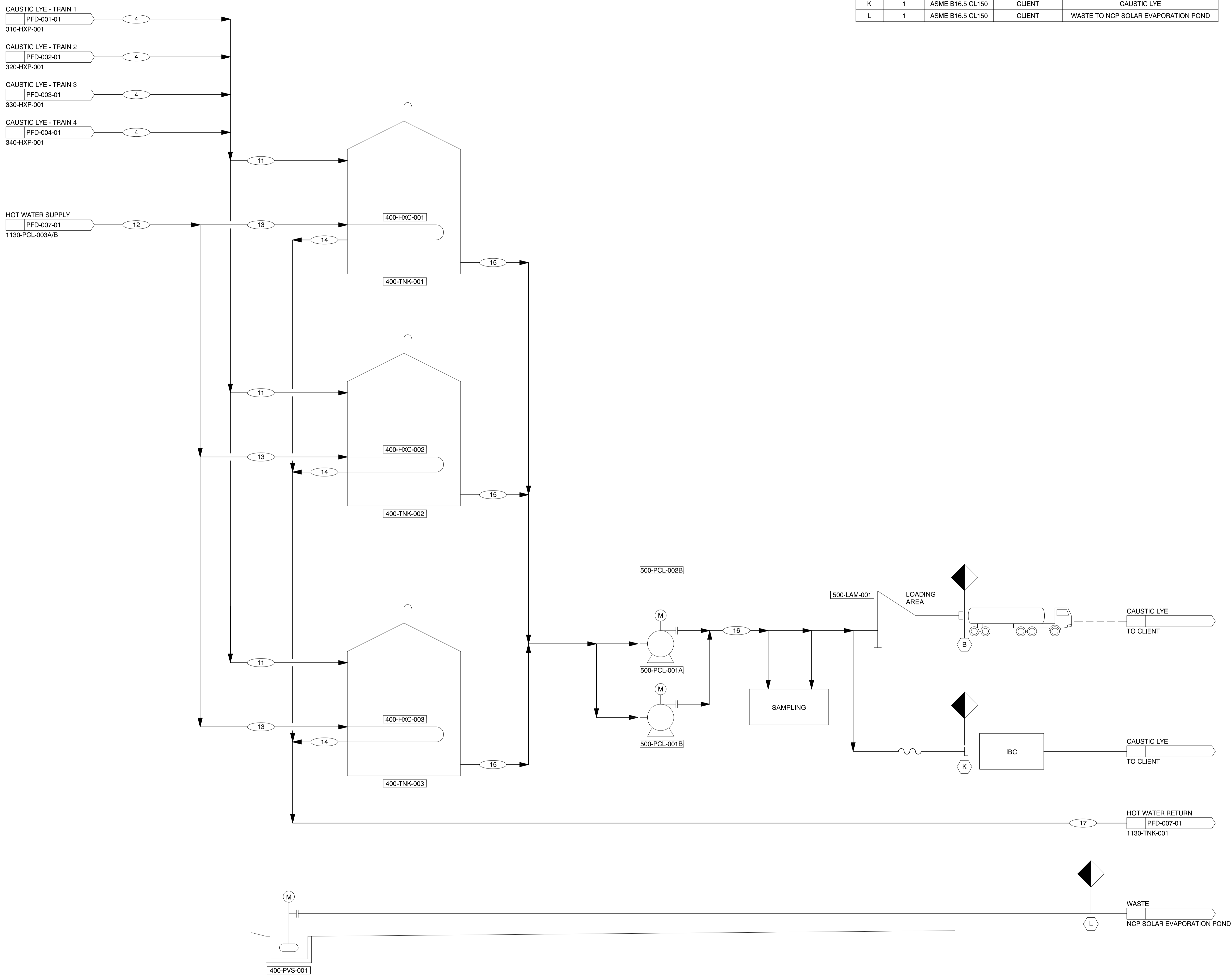
PROJ. ENG. []
 SECT. LDR. []
 PROJ. MNG. []
 CLIENT []

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BATTERY LIMITS

MK	QTY.	TYPE	RESPONSIBILITY	DESCRIPTION
B	1	DRY BREAK	CLIENT	CAUSTIC LYE
K	1	ASME B16.5 CL150	CLIENT	CAUSTIC LYE
L	1	ASME B16.5 CL150	CLIENT	WASTE TO NCP SOLAR EVAPORATION POND

EQUIPMENT No.	QTY	DESCRIPTION	kW
400-HXC-001	1	HEATING BAYONET COIL	-
400-HXC-002	1	HEATING BAYONET COIL	-
400-HXC-003	1	HEATING BAYONET COIL	-
400-PVS-001	1	STORAGE AREA SUMP PUMP	TBC
400-TNK-001	1	CAUSTIC LYE STORAGE TANK	-
400-TNK-002	1	CAUSTIC LYE STORAGE TANK	-
400-TNK-003	1	CAUSTIC LYE STORAGE TANK	-
500-LAM-001	1	CAUSTIC LYE LOADING ARM	-
500-PCL-001A	1	CAUSTIC LYE LOADING PUMP	TBC
500-PCL-001B	1	CAUSTIC LYE LOADING PUMP (STANDBY)	TBC
500-PCL-002A	1	CAUSTIC LYE PRODUCT PUMP	TBC
500-PCL-002B	1	CAUSTIC LYE PRODUCT PUMP (STANDBY)	TBC



LEGEND

- NEW
- - - VENDOR PACKAGE
- CONTAINERISED / SKID

PROPROCESS
 OTHERS

PRELIMINARY

REV.	DATE	DESCRIPTION	BY	CHKD.	APPR.
B.1	2020-02-28	ISSUED FOR CLIENT COMMENT		NS	
A.2	2020-02-20	ISSUED FOR INTERNAL COMMENT		NS	ES SBB
A.1	2020-01-27	ISSUED FOR INTERNAL COMMENT		NS	ES SBB

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APPROVAL		
DEPT.	DATE	SIGN
MECH.		
ELECT.		
INSTR.		
CIVIL		
STRUCT.		
PIPING		
PROCESS		

DESIGNED, DRAWN AND ISSUED BY PROPROCESS
 PROFESSIONAL ENG. / TECH.:-
 ECSA REG. NO.:- REV.:-

J710 - CAUSTIC MAKE-UP PLANT
 AREA 400 AND 500
 CAUSTIC LYE STORAGE AND LOAD-OUT
 PROCESS FLOW DIAGRAM

PROJ. ENG.	SCALE	CLIENT
SECT. LDR.	N.T.S	AFRICAN CHEMICALS
PROJ. MNG.	SHEET	PROJECT NUMBER - COST CODE - SPECIFIC AREA NUMBER - DOC. TYPE - SEQUENCE - SHEET
CLIENT	1 OF 1	110942-HDR-PRO-J710-PFD-005-01 B.1

Path: Z:\11-Design\110942-HDR-PRO-J710-PFD-005-01-B.1-CAUSTIC LYE STORAGE AND LOAD-OUT.dwg

6.9 OPPORTUNITIES

The motivation for this project is provided in the sub-sections below in terms of:

- Employment opportunities.
- Skills development.
- Project location.
- Investment value.
- Feasibility study.
- Market study.

6.9.1 Employment Opportunities

It is projected that AC caustic soda operation will create approximately 52 permanent skilled employment opportunities, with 55% of these opportunities targeted for previously disadvantaged youth. In addition, approximately 60 people would be employed on a contract basis. There will also be around 300 direct employment opportunities during the construction phase of the project. Opportunities would be created for skilled and trained workers. AC plans to award goods and services contracts for the during construction and operation of the proposed plant to small, medium and micro sized enterprises (SMMEs) in Gauteng, Ekurhuleni area. These contracts shall include canteen, security, gardening, cleaning, transport, mobile equipment maintenance, sales officer, and Information Communication Technology (ICT). Based on an average of each worker supporting six other persons, the project could potentially provide significant indirect local economic benefits. The expected employment benefits for the CAUSTIC SODA operation are illustrated in the following organogram and other chapters below (AC, 2020).

6.9.1 Parameter Profile Value

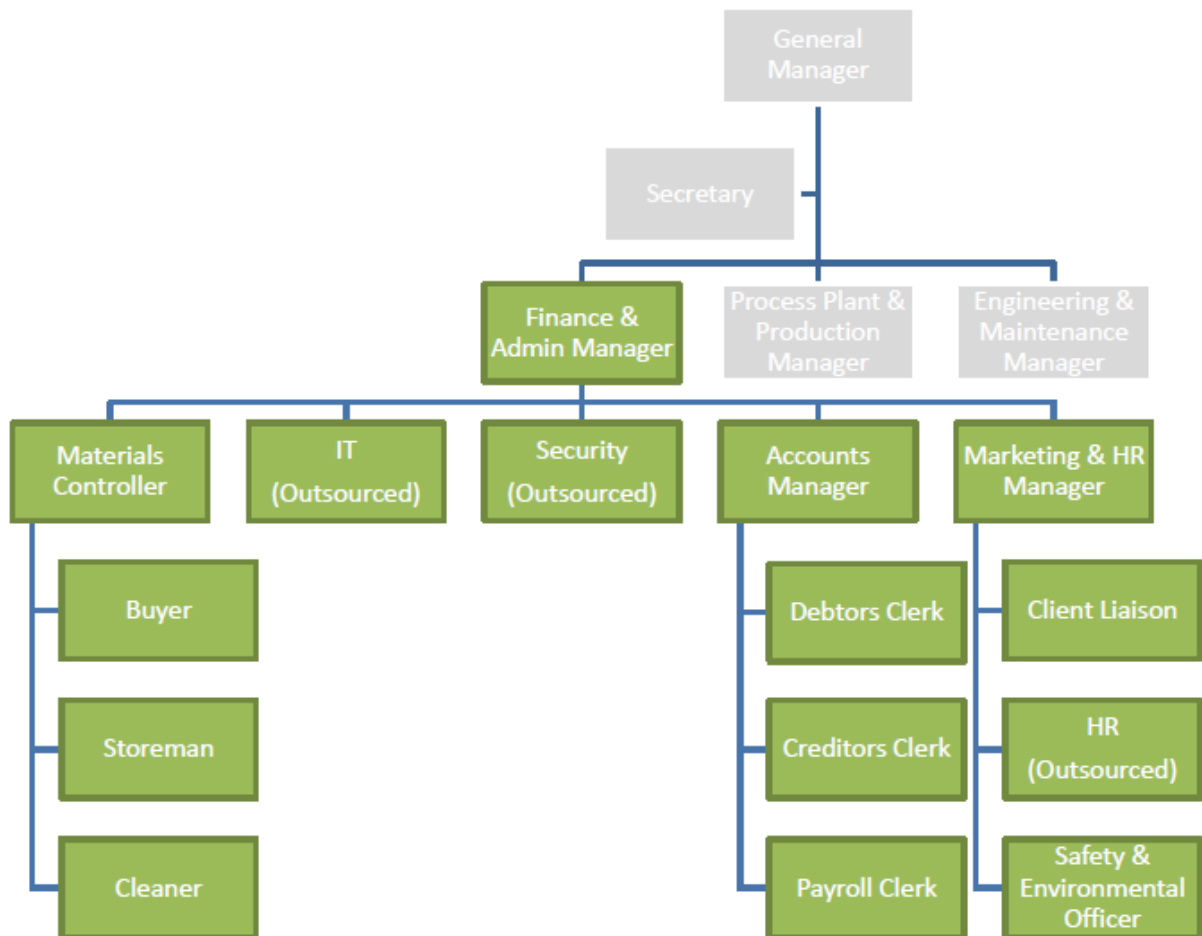
Table: 7.2: - Expected Employment Benefit from the Caustic Soda Operation

Parameter	Profile	Value
Jobs created by ongoing operation	Permanent	52
Jobs created during construction phase	Temporary	300
Jobs created through Enterprise and Supplier Development	Flexible	60
Designated jobs for Black		80%
Designated Jobs for Black Women		50%
Designated Jobs for Black Youth		55%
Designated Jobs for People living with disabilities		3%
Total Number of Jobs Created excl. enterprise development		629
Total Project Investment		ZAR 133.5 mil

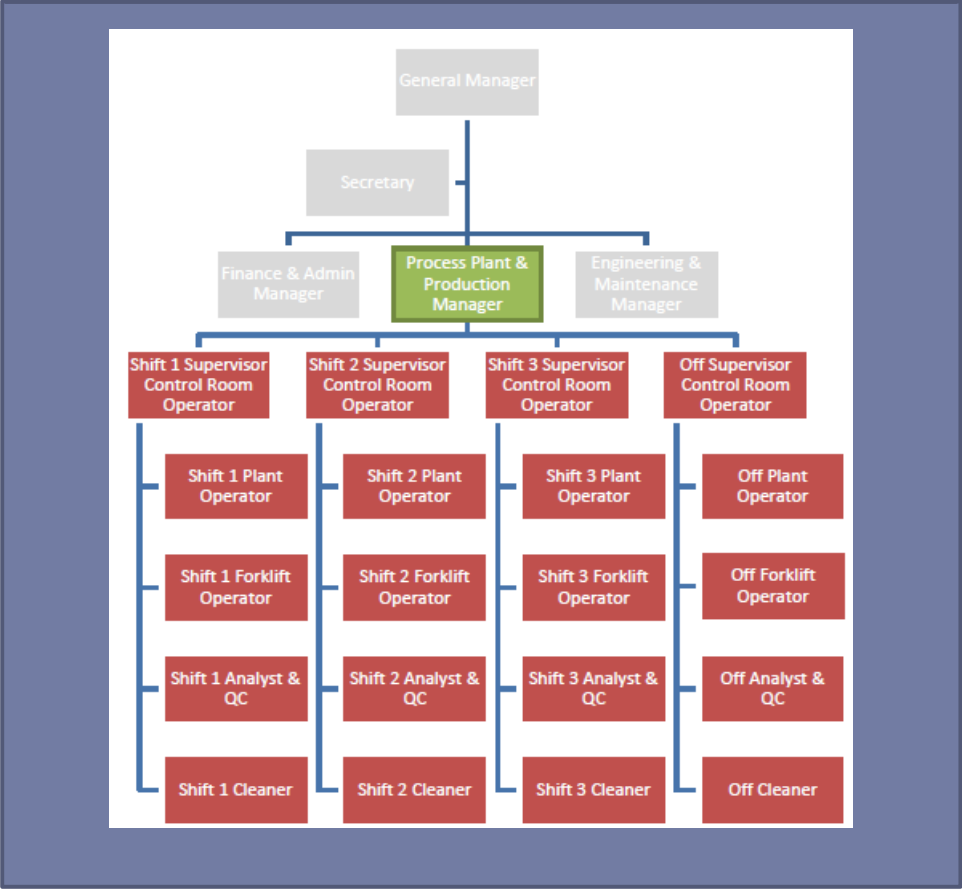
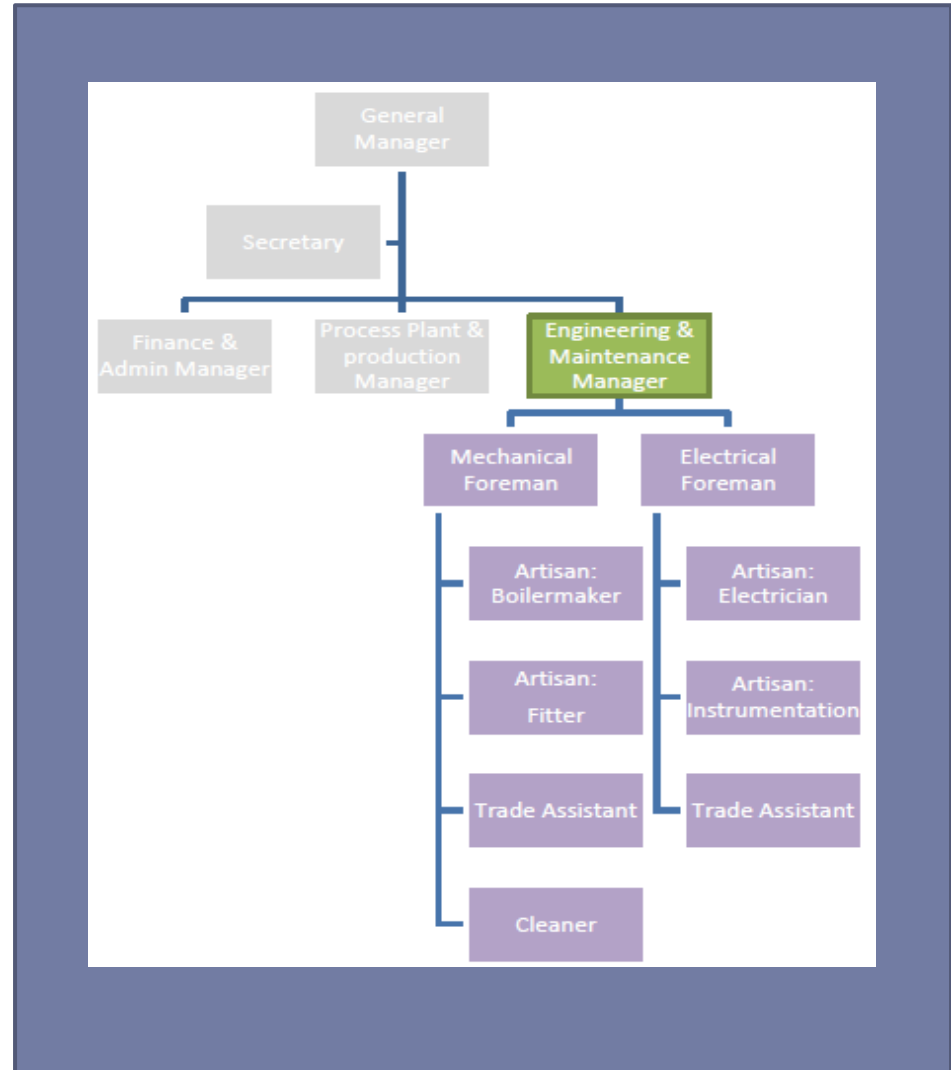
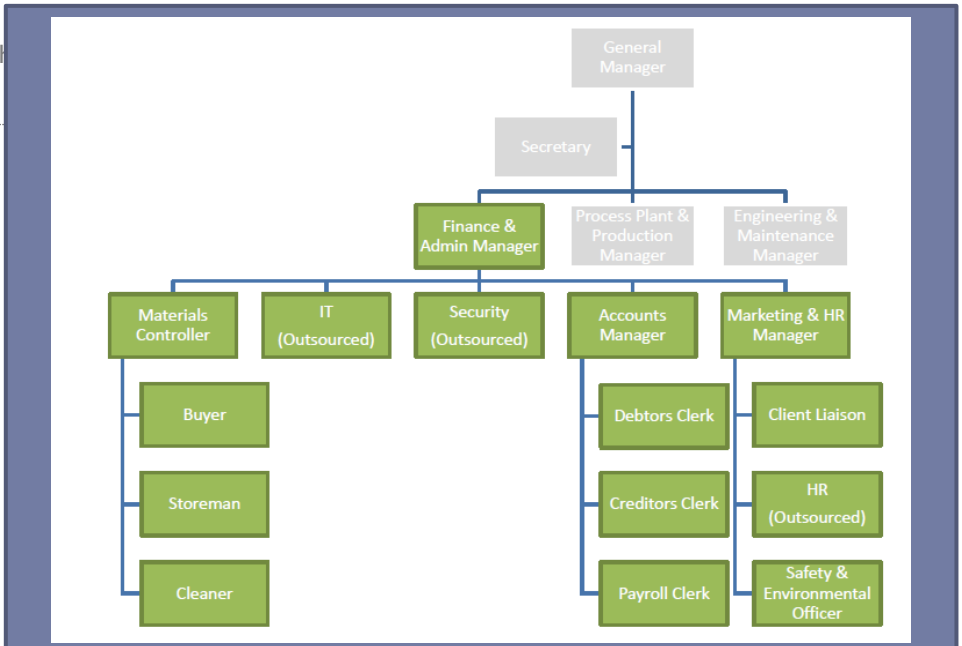
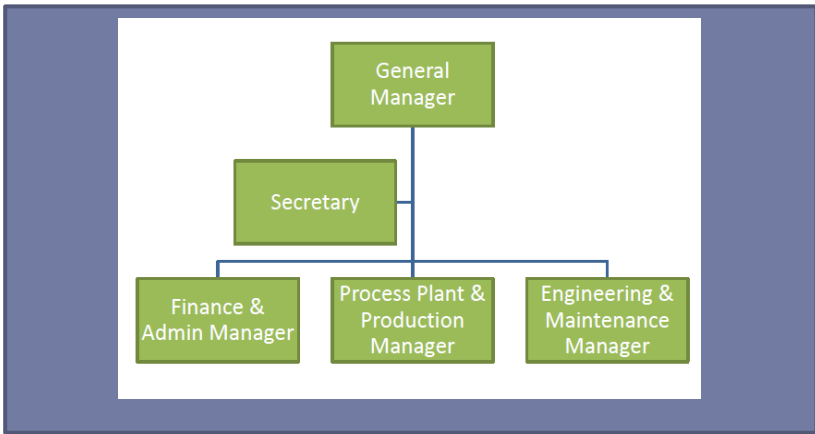
6.9.2 Skills Development

African Chemicals (AC) is committed to developing the skills required to run a caustic soda plant. AC's technological partner will ensure that its recruitment strategy is aligned to the selection of a team of highly skilled and adequately experienced employees. The employees will be given the opportunity to develop their skills further as part of their career development pathway. This pathway will outline their progression from their initial position to a position to which they aspire. Career pathways will be unique to each employee. AC plans to appoint experienced managers in key management positions (see the attached, organogram – Figure 7.2.3, such as the marketing manager and chief financial officer. Management training and development is intended to play a key role in the future growth plans of the enterprise. Relevant training courses and workshops will be attended, where required, to address shortcomings in key performance areas such as strategic planning, general management, strategy implementation, effective coordination and control of activities, and time management

6.9.3 Company Organogram



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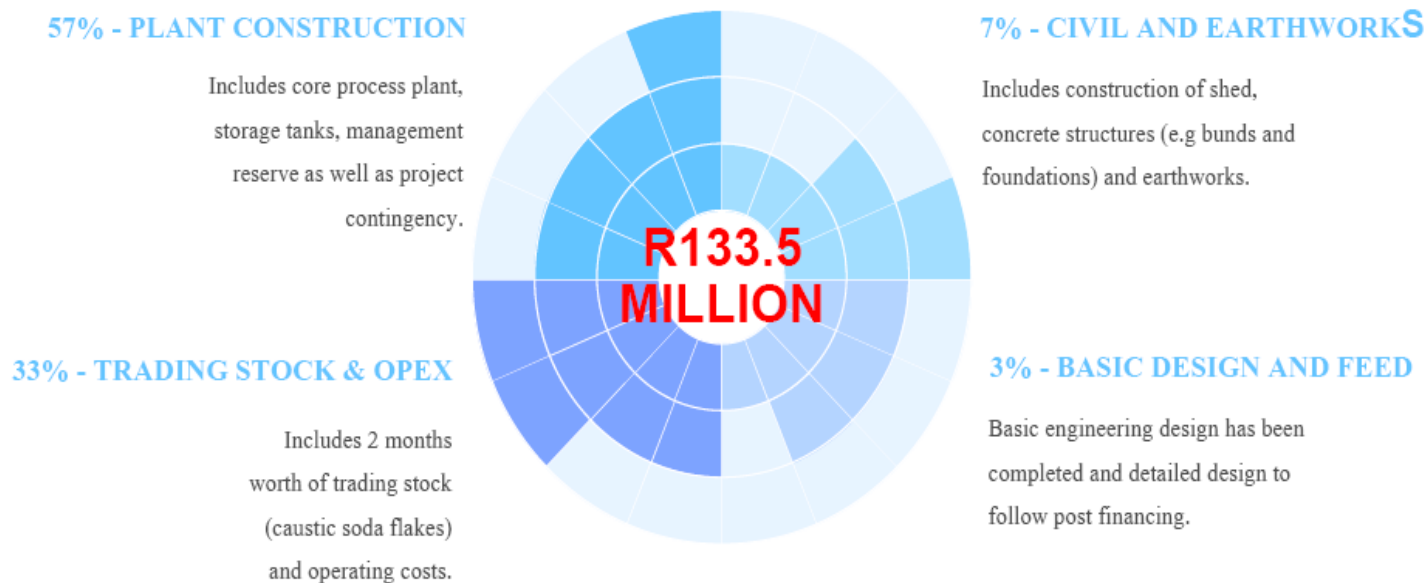


Some of the training that will be required to be undertaken includes:

- Safety, Health and Environment management and awareness (including emergency response).
- Forklift operation.
- Dangerous goods handling.
- ISO9001, ISO14001, ISO 45001 and NSF listing
- Plant operation.
- CAUSTIC SODA chemistry and handling.
- Crane handling.
- Operation troubleshooting.

6.9.4 Investment value:

REQUIRED CAPEX – R133.5 MILLION



Source: AC 2020

6.9.5 Feasibility Study

The following assessments are currently underway to assess the techno-economic feasibility of the proposed AC caustic soda plant:

- Process design – technology partner ProProcess Engineers (ProProcess) have previously installed several similar plants in the Southern Africa and is the technology partner and subsequent Civil designs.
- Costing – capital expenditure (CAPEX) and operational expenditure (OPEX). (AC, 2020)
- The CAPEX, OPEX and financial modelling will be revised to cater for the outcome of these studies (AC, 2020)
- Financial modelling - (AC, 2020)
- Market study - (AC, 2020)
- Logistics and Transport (TIA) study by Oaroon Engineers a reputable Engineering firm
- Geotechnical study by Kimopax a reputable engineering firm in geotechnical services
- Hydrological study
- Environmental and Health and Safety (Batach Holdings) – current EIA studies

6.9.6 Market Study

A market study was undertaken by African Chemicals as part of the project feasibility study. The study includes a market analysis and review of the historical supply and demand as well as the characteristics of the relevant product mix. It describes the nature of the chemicals market in South Africa, the size of the market and dominant players in the South African market.

African Chemicals research, shows that the global caustic soda market trends has reached a massive volume of 75.9 million tonnes which represents the market size of R455 billion per annum. It is expected to reach 89, 6 million tonnes by 2024 which will register a CAGR of approximately 3% between the years 2019-2024. South Africa consumes approximately 250,000 (Dry metric tonnes) (DMT / year) of Caustic soda. Monthly production is approximately 12,000 DMT per month from SASOL; 7,000 DMT per month from NCP and the remainder is imported by SAPPI and Protea Mining. The rest are only 3 manufacturing plants in Africa, two of which are in South Africa. Although the commodity represents a colossal opportunity, the barriers to entry for new entrants into this market are very high as a new plant could cost approximately R2 billion and importing lye requires a minimum working capital of approximately

RI00 million and access to storage at one of the major harbours (which is extremely challenging) (Pro-Process, AC, 2020). Various end-users have been secured by AC via Letters of Intent or Memorandums of Understanding and selling prices of the selected product mix have been projected. The primary uses, applications and market segments for caustic soda and associated secondary products of these chemicals are listed in **Table 7-2**.

Main Market Segments: Table 7-2

Product Industry	Segment	Application
CAUSTIC SODA	Mining	Ore refining
	Water treatment	pH regulation
	Landfill	Leachate treatment (chemical precipitation)
	Food and beverage	Cleaning
	Paper and Pulp	Pulp production
	Petroleum	Process gas cleaning
	Textiles	Mercerisation
	Soaps and detergents	Soap production

6.10 Production inputs i.e. utilities, feed stocks and consumables)

African Chemicals has decided to import the product in solid form, transport it by road to Johannesburg, and dissolve it back into lye form before placing the product into the market. The dissolution of Caustic Soda is hazardous because of an **exothermic chemical** reaction (release of excessive heat) that takes place when the product is mixed with **water**. Therefore, the temperature in the dissolution vessel needs to be controlled using a suitable cooling system

6.10.1 Process Objective

The technology partner detailed the objective of the facility that it "is to receive caustic flakes or prills delivered to the battery limit in bulk bags. Material handling systems will debag and meter the caustic flakes to the dissolution tanks. Due to the exothermic nature of the caustic dissolution system, heat will be removed from the dissolution tanks by external heat exchangers. Caustic lye will then be stored in bulk storage tanks from where it will be loaded to either bulk tankers or Intermediate Bulk Containers (IBCs). (AC, 2020).

6.10.2 FEED Definition

The facility will then receive bulk bags of caustic flakes or prills which are offloaded and stored in the warehouse minimum of 5000 tones/per month dry which comes in the form of 1 – 1.25 ton bulk bags. The Caustic Lye, at a 50%w/w concentration, is then stored at 40 degrees Celsius (°C) in heated bulk storage tanks to prevent crystallization.

Parameter	Unit	Range	Source
Total inventory turnover / yr	tonnes/month	5000 (Dry NaOH /equivalent)	African Chemicals (CLN)

Feed Definition. Parameter	Unit	Source
Caustic Feed	1 ton or 1.25-ton Bulk Bags	African Chemicals (CLN)

6.10.3 Feed Properties:

Parameter	Unit	Description	Source
Generic name		Caustic Flakes of Prills	African Chemicals (CLN)
Composition		NaOH - % Fe - % Cl - %	African Chemicals (CLN)
Water solubility (20°C)	g/l	1.26	Engineering Handbook Data
Density (20°C)	kg/m ³	2130	Engineering Handbook Data
Bulk Density (20°C)	kg/m ³	1150 (Caustic Flakes)	Engineering Handbook Data
Chelating resin	0,01 litres		
The Caustic Lye			
Generic name	Caustic Lye		African Chemicals (CLN)
Composition	NaOH . 47% min Na ₂ CO ₃ . 0.2% max		African Chemicals (CLN)

(Source: Pro-Process 2020)

6.10.4 Power Supply

The required power supply: African Chemicals to provide power (400 V 3 phase, 50Hz) and the 630A feeder in the substation

Parameter	Unit	Range
Low Voltage Supply	V	400
Frequency	Hz	50
Phase		3

6.11 Production outputs i.e. products, liquid effluent, atmospheric emissions and solid waste

6.11.1 Waste Streams

The design clearly indicate that the facility is a zero effluent plant, however further investigation and specialist studies will further investigate and determine if there will be any waste streams. The emissions, spillages, leaks and disposal requirements will be clearly defined during the environmental report phase.

In design the following is clearly indicated that: there will be

- Empty bags and bag liners after debagging of caustic flakes that will be generated – African Chemicals will need the **disposal facility of the empty containers in the form of Skips**
- Caustic dust from caustic flakes debagging is extracted to a scrubber unit where the **dust will be scrubbed with demineralised water**. The dissolved caustic from the scrubber unit is routed back to the caustic dissolution tanks - investigation of possible leaks
- Vent-gas from the caustic dissolution tanks is directed to atmosphere. **This is clean air and water vapour.**
- **Vent-gas from the scrubber unit is discharged to atmosphere.** This is clean air and water vapour.
- Provision is made in the design for the capture and processing of storm water runoff from the containment areas (Bund), spillages and tank overflows. In case of an emergency event, these are contained and directed to the proposed new containment infrastructure or Pollution control facility – the EIA will recommend in details
- Spillage or uncontrolled discharges into watercourses will be alerted to the Department of Water and Sanitation and other appropriate regulatory bodies.
- **Waste generated during construction:** The removal of site material during the construction such as domestic waste generated (building rubble, excavated soils and general waste, considered non-hazardous) is expected to be generated during construction of the proposed project. If any contaminated soils have occurred at the existing activities, the extent of contamination would be established and the contaminated soil would be removed for disposal by proposed contracted services company that AC is currently engaging which is currently picking waste and taken to Holfontein.

Table: 7-4.1 Waste Products & Effluents Properties – Vent-gas. Parameter

Origin	Unit	Source
Composition	1. Vent-gas from caustic dissolution 2. Scrubber unit	ProProcess Recommendation (PPR)
Destination	Air and water vapour To atmosphere	ProProcess Recommendation (PPR)

Table 7-4.1.2: Waste Products & Effluents Properties – Scrubbed caustic dust Parameter

Origin	Unit	Source
Origin	1. Scrubbed caustic dust dissolved in water	ProProcess Recommendation (PPR)
Destination	To Caustic Dissolution Tanks	ProProcess Recommendation (PPR)

Table 7-4.1.2 Waste Products & Effluents Properties – Storm water, spillages and overflows Parameter

Origin	Unit	Source
Origin	1. Storm water runoff. 2. Tank overflow or draining 3. Spillages	ProProcess Recommendation (PPR)
Destination	Proposed New Containment infrastructure	African Chemicals (CLN)

6.12 Construction and Commissioning Timelines (Typical Timelines)

The construction and commissioning timelines for a typical Caustic-soda plant of this size are shown below. The process units, skids, control system, and instrumentation will be procured from the local South African suppliers, and many of these are long-lead items. The skids that will be procured outside of South Africa are pre-assembled and shipped to South Africa. The civil (earthwork), pipework, electrical, pumps will mostly be procured from within South Africa, and are not expected to have long lead times. Some process equipment/vessels, which are not skid-mounted, will also be procured from within South Africa. Tie-ins of required services and utilities will be planned and co-ordinated during the civil engineering phase.

6.12.1 Schedule

The proposed project has a high level schedule with milestones has been compiled. The overall project milestones estimated at 34-36 weeks from the initiation to commissioning completion.

- **The design completion and modifications – 6 weeks**
- **Equipment procurement - 22 weeks**
- **Fabrication – 20 weeks**
- **Site installation – 3 weeks**
- **Commissioning – 4 weeks after site installation**

The project will not need any new technology or out of the ordinary installations expertise but only by appointing competent contractors to execute the project. African Chemicals has further conducted the Risk and Emergency Plan study that will ensure that Risk is managed and mitigated properly. It is expected that the final handover of the Caustic Make-up plant to operations personnel as outlined in the organogram will be largely dependent on a Phased approach recommended by the technology partner, which AC has also adopted (AC: ProProcess design: 2019)

6.13 Required Authorisations

The proposed African Chemicals Caustic soda plant requires certain authorisations, licences and permits prior to the commencement of construction. The activities on a proposed ERF 1981R as indicated on Listed activities above, will be greatly predicted from the existing similar operation in the vicinity.

The application via an S&EIR will be undertaken which will include the application of a separate Waste Management Licence via a Basic Assessment which will be submitted separately and the application of Emissions Air licence to the relevant authority.

6.13.1 Site Wide Perspective

A mixture of industrial and residential developments surrounds the proposed site. Chloorkop village, and further on Tembisa residential developments (Phomolong) occur to the north of the site. Other residential areas in close proximity include Birch Acres and Kempton Park West, with industrial areas including Modderfontein and the Modderfontein Conservation area. There are informal and formal industrial developments to the east of the site. To the south of the solar evaporation farm are an old sand quarry and a closed landfill.

6.13.2 Stakeholder Engagements

Batach Holdings will ensure that during the EIA Public participation the Interested and affected parties within the primary area are thoroughly consulted. The social facilitation team has compiled a comprehensive database that will be updated throughout the stages of the EIA processes.

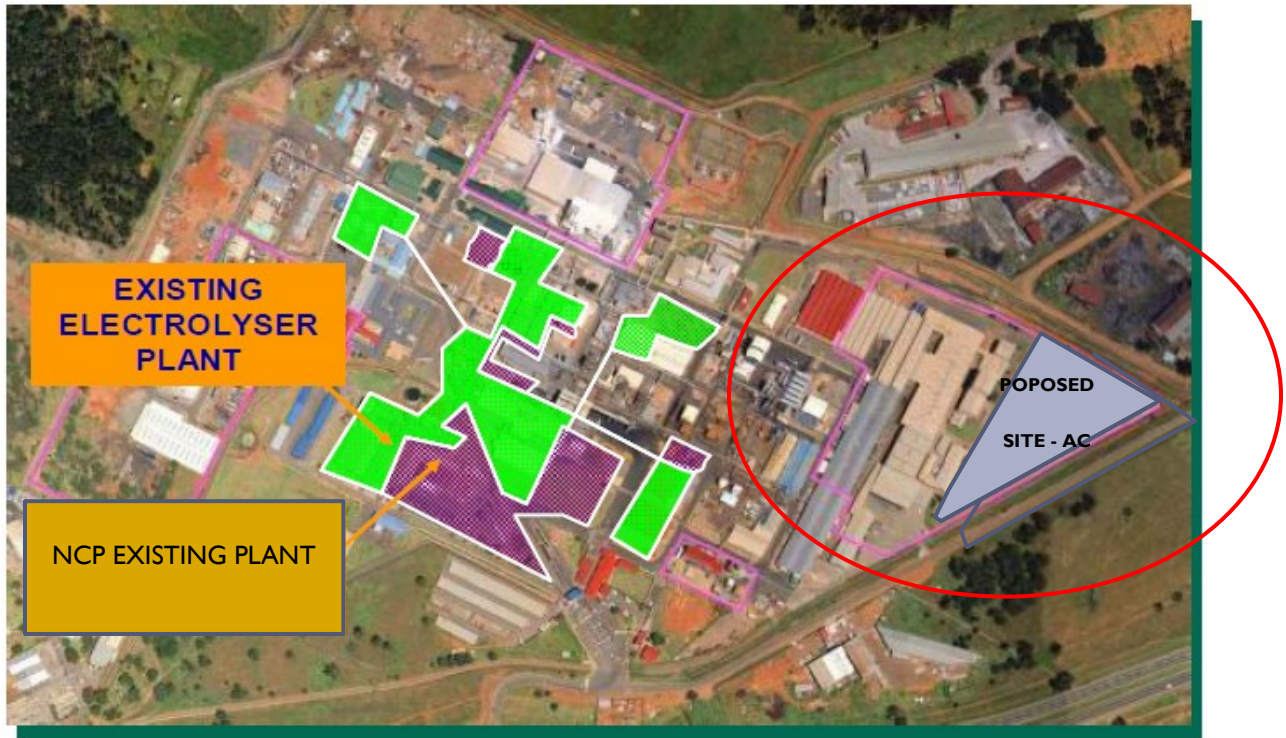


Image Inset: Golder Associates

6.13.3 Industries

The area is zoned as Industrial type one (1) within the City of Ekurhuleni zoning scheme. Most of the nearby industries operate similar chemical products.



7 Legislative Context

In accordance with Items 2. (1)(d)(i) And 2.(1)(e) in Appendix 2 of GN 326, this chapter provides:

- A description of all listed and specified activities triggered.
- A description of the policy and legislative context within which the development is proposed, including identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to the assessment process.

Relevant legislation, policy, programmes and plans relating to the following aspects were consulted:

- The South African Constitution Act 108 of 1996.
- National Environmental Management (NEMA) Act 107 of 1998.
- NEM: WA - Waste management Act 59 of 2008.
- National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
- National Water Act, 1998 (Act No. 36 of 1998)
- NEM: BA – Biodiversity Act.
- Heritage Act
- Health and Safety Risk.
- Planning.
- Municipal bylaws and permits.
- Local policies, programmes and plans.
- Critical Infrastructure Act 08 of 2019 – for National Key Points

Other Legislative Requirements that are applicable to the Proposed Caustic soda and lye.

7.6 Other Legislations

- Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)
- Hazardous Substances Act, 1973 (Act No. 15 of 1973)
- Storage & Distribution
- *API 650 Welded Steel Tanks for Oil Storage.*
- *NACE SP0403-2015 Avoiding Caustic Stress Corrosion Cracking of Carbon Steel Equipment and Piping*
- Electrical
- *SANS 10142 Wiring of premises Piping and Fittings*
- *ASME B16.5 Pipe flanges and flanged fittings. NPS ½ through NPS 24.*
- *ASME B16.9 Factory-made wrought steel butt-welding fittings.*
- *ASTM A106 Specification for seamless carbon steel pipe for high-temperature service.*

- ASTM A312 *Specification for seamless and welded stainless steel pipes.*
- SANS 10140-3 *Identification colour markings. Part 3: Contents of pipelines. Fire Protection*
- SANS 10400 *National Building Regulations.*
- SANS 10105. 2 *The use and control of fire-fighting equipment – Fire hose reels and*

7.2 South African Constitution

The Constitution of the Republic of South Africa Act 108 of 1996 is the supreme law of the land. In terms of environmental management, the Constitution provides the overarching framework for sustainable development, including the protection of natural resources while promoting economic and social development.

The environmental clause in Section 24 of the Constitution provides that: “Everyone has the right –

- a) *To an environment which is not harmful to their health or wellbeing.*
- b) *To have the environment protected for the benefit of present and future generations through reasonable legislation and other measures that:*
 - (i) *Prevent pollution and ecological degradation;*
 - (ii) *Promotes conservation*
 - (iii) *Secure ecologically sustainable development and the use of natural resources while promoting justifiable economic and social development.”*

7.3 Environmental Management Act

The National Environmental Management Act 107 of 1998 (NEMA) provides for co-operative governance by establishing decision-making principles on matters affecting the environment including:

- Sustainable development.
- Integrated environmental management.
- Polluter pays principle.
- Cradle to grave responsibility.
- Precautionary principle.
- Involvement of stakeholders in decision-making.

The enforcing authority for NEMA is the DEA and provincial environmental authorities (for this application is Gauteng Department of Agriculture and Rural Development (GDARD) - is the competent authority). NEMA provides for the management and protection of environmental resources through inter alia the imposition of Environmental Authorisation requirements. The NEMA listed activities as described below triggered by the development and operation of the proposed caustic soda plant, and will subsequently require authorisation. As activities from Listing Notice 2 are triggered, an S&EIR process is being undertaken.

The Amendments to the 2014 EIA Regulations, as issued on 07 April 2017 in terms of NEMA, consist of the following:

- GN 326 specifies the EIA procedures to be followed.
- GN 327 provides Listing Notice 1 – activities that require a Basic Assessment (BA) process.
- GN 325 provides Listing Notice 2 – activities that require an S&EIR process.
- GN 324 provides Listing Notice 3 – activities in identified geographical areas that require a BA process.

7.4 Application for Environmental Authorisation for CAUSTIC SODA Project

The following NEMA listed activities are included in the current application:

Activity 4 of GN 325: The development and related operation of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres.

Activity 6 of GN 325: The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent, excluding—

- (i) activities which are identified and included in Listing Notice 1 of 2014;
- (ii) activities which are included in the list of waste management activities published in terms of 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;
- (iii) the development of facilities or infrastructure for the treatment of effluent, polluted water, wastewater or sewage where such facilities have a daily throughput capacity of 2 000 cubic metres or less; or
- (iv) where the development is directly related to aquaculture facilities or infrastructure where the wastewater discharge capacity will not exceed 50 cubic metres per day

Activity 7 of GN 325 The development and related operation of facilities or infrastructure for the bulk transportation of dangerous goods—

- (i) in gas form, outside an industrial complex, using pipelines, exceeding 1 000 metres in length, with a throughput capacity of more than 700 tons per day
- (ii) in liquid form, outside an industrial complex, using pipelines, exceeding 1 000 metres in length, with a throughput capacity of more than 50 cubic metres per day; or
- (iii) In solid form, outside an industrial complex, using funiculars or conveyors with a throughput capacity of more than 50 tons per day.

Activity 56 of GN 327 The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre—

- (i) where the existing reserve is wider than 13,5 meters; or
where no reserve exists, where the existing road is wider than 8 metres

Activity 46 of GN 327 - The expansion and related operation of infrastructure for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes where the existing infrastructure-

- (i) has an internal diameter of 0,36 metres or more; or
- (ii) has a peak throughput of 120 litres per second or more; and
- (a) where the facility or infrastructure is expanded by more than 1000 metres in length; or
- (b) where the throughput capacity of the facility or infrastructure will be increased by 10% or more; excluding where such expansion-
 - (aa) relates to transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes within a road reserve; or
 - (bb) will occur within an urban area.

Note that although, the activities listed on listing notice 1, the following activities are included in the proposed project: and a separate Basic assessment application will be lodged.

- 1) Caustic dust from caustic flakes debagging is extracted to a scrubber unit where the dust will be scrubbed with **demineralised water**. The dissolved caustic from the scrubber unit is routed back to the caustic dissolution tanks.
- 2) Vent-gas from the caustic dissolution tanks which will be directed to atmosphere is a **clean air** and **water vapour** since this is clean air and water vapour does not trigger the environment – compliance with the specified Minimum Emission Standards (MES) noted in the relevant Subcategory 7.7
- 3) Vent-gas from the scrubber unit is discharged to atmosphere.
- 4) Bund provision is made in the design for the capture and processing of storm water runoff from the containment areas, spillages and tank overflows or leaks. In case of a Hazard or in an emergency event, these are contained and will be directed to the new proposed waste containment infrastructure. Batach Holdings is of the opinion that; it is excluded from Activity 10 of GN 327 in terms of the 2017 Amended EIA Regulations.
 - Although **400 V** of power is an electrical need from the African Chemicals site/ footprint, this will occur within an urban area and is less than regulation required threshold of 10 MW which is a stipulated in Activity 1 of GN 327.

Table 7-4 NEMA LISTED ACTIVITIES

No	Activity Description	Applicability to the Project
	NEMA EIA Listing Notice 2 (GN 325) – S&EIR process required	
4	<p>The development and related operation of facilities or infrastructure, for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of more than 500 cubic metres.</p> <p>Where "dangerous goods" means goods containing any of the substances as contemplated in South African National Standard No. 10234, supplement 2008 1.00: designated "List of classification and labelling of chemicals in accordance with the Globally Harmonized Systems (GHS)" published by Standards South Africa, and where the presence of such goods, regardless of quantity, in a blend or mixture, causes such blend or mixture to have one or more of the characteristics listed in the Hazard Statements in section 4.2.3, namely:- physical hazards, health hazards Or environmental hazards</p>	<p>The proposed combined capacity of containers for the storage and handling of dangerous goods on site will exceed 500 cubic meters – requires an authorisation</p> <p>slip road, security access, weighbridge, New warehouse, production facility, tank farm</p> <p>The following storage capacities are proposed:</p> <ul style="list-style-type: none"> ▪ 1000 kg or 1250 kg bulk Caustic Flakes - bags stored in a warehouse ▪ 3 x 500 - Total Caustic Lye storage capacity ▪ Construction and operation of the above-listed facilities and associated infrastructure constitutes Listed Activity No. 4 of GN 325.
6	<p>The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent, excluding-</p> <p>(i) activities which are identified and included in Listing Notice 1 of 2014;</p> <p>(ii) activities which are included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies;</p> <p>(iii) the development of facilities and infrastructure for the treatment of effluent, polluted water, wastewater or sewage where such facilities have a daily throughput capacity of 2 000 cubic metres or less; or</p> <p>(iv) Where the development is directly related to aquaculture facilities or infrastructure where the wastewater discharge capacity will not exceed 50 cubic metres per day.</p>	<p>The development of facilities and infrastructure for the proposed AC plant may require an application for an Atmospheric Emissions Licence (AEL) in terms of the National Environmental Management: Air Quality Act No. 36 of 2004 (NEM:AQA).</p> <p>Noting that the following</p> <ul style="list-style-type: none"> • Vent-gas from caustic dissolution will be addressed during EIA • Scrubber unit – • Air and water vapour – clean air <p>Waste Management Act</p> <ul style="list-style-type: none"> • Waste – removal of soil /rubble during construction, • the general domestic waste such as Empty bags and bag liners after debagging of caustic flakes -

No	Activity Description	Applicability to the Project
		<p>from infrastructure related activities may require WML</p> <ul style="list-style-type: none"> • Caustic sump waste – to containment infrastructure to be constructed for any caustic sump waste – Waste containment infrastructure
	<p>Activity 7 of GN 325 The development and related operation of facilities or infrastructure for the bulk transportation of dangerous goods—</p> <ul style="list-style-type: none"> (iv) in gas form, outside an industrial complex, using pipelines, exceeding 1 000 metres in length, with a throughput capacity of more than 700 tons per day (v) in liquid form, outside an industrial complex, using pipelines, exceeding 1 000 metres in length, with a throughput capacity of more than 50 cubic metres per day; or (vi) In solid form, outside an industrial complex, using funiculars or conveyors with a throughput capacity of more than 50 tons per day. 	<ul style="list-style-type: none"> ▪ Caustic lye tanker – load out - ▪ Caustic will be loaded into customer tanker trucks or Intermediate Bulk Containers (IBC) ▪ Transportation of the caustic soda - import dry caustic, transport it to the newly proposed facility
	<p>NEMA EIA Listing Notice 1 (GN 327) – BA process required</p>	
	<p>Activity 56 of GN 327 The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre—</p> <ul style="list-style-type: none"> (i) where the existing reserve is wider than 13,5 meters; or (ii) where no reserve exists, where the existing road is wider than 8 metres excluding where widening or lengthening occur inside urban areas. 	<p>Transportation of the caustic require the widening of the road for the 30-ton trucks to manoeuvre easily.</p> <p>The volume -The total number of vehicles or other roadway users that pass over a given point or section of a lane or roadway during a given time interval, often 1 hour should be conducive</p> <p>The proposed construction of 2 entrance</p>

7.5 Waste Management

The National Environmental Management: Waste Act 59 of 2008 (NEM:WA) regulates waste management in order to protect the health and environment of South African citizens. This is achieved through pollution prevention, institutional arrangements and planning matters, national norms and standards and the licencing and control of waste management activities. The enforcing authority for NEM:WA is the DEA for hazardous waste and the provincial environmental authority (Gauteng Department of Agriculture and Rural Development - GDARD) for general waste. A list of waste management activities that have, or are likely to have, a detrimental effect on the environment was published in terms of NEM:WA under GN 921 on 29 November 2013 (as amended by GN 1094, 11 October 2017). Waste management activities are listed in three categories (Category A, B and C).

Activities listed in Category A require that a BA process to be undertaken as part of the application for a Waste Management Licence (WML), while activities listed in Category B require that an S&EIR process be undertaken for the WML application. Waste activities listed in Category A and B include:

- Storage of waste in lagoons (excluding effluent, wastewater and sewage).
- Reuse, recycling or recovery of waste.
- Treatment of waste.
- Disposal of waste on land.
- Construction, expansion or decommissioning of facilities and associated structures and infrastructure.
- Residue stockpiles or residue deposits.

Various thresholds are stipulated in Category A and B which determine whether the listed waste management activities require application for a WML and if so, whether a BA or S&EIR application is required. Based on a review of the proposed activities, it is deemed that a separate Basic Assessment will be submitted for the application for a WML is required for the activities listed below: -

- Caustic Flakes – empty bags
 - Empty bags and bag liners after debagging of caustic flakes - 1 ton or 1.25-ton Bulk Bags

Category C lists waste management activities for which WML is required, but a person commencing, undertaking or conducting these activities must comply with the relevant requirements or standards. The National Norms and Standards for the Storage of Waste (GN 926, 29 November 2013) may potentially be applicable to the proposed development in the following circumstances:

- The storage of general waste at a facility that has a capacity to store in excess of 100 m³ of general waste at any one time, excluding the storage of waste in lagoons or temporary storage of such waste.
- The storage of hazardous waste at a facility that has the capacity to store in excess of **80 m³** of hazardous waste at any one time, excluding the storage of hazardous waste in lagoons or the temporary storage of such waste.

The National Norms and Standards for the Sorting, Shredding, Grinding, Crushing, Screening, or Bailing of General Waste (GN 1093, 11 October 2017) may potentially be applicable to the proposed development in the following circumstances – the contracted services company will determine during the EIA for the:-

- The sorting, shredding, grinding, crushing, screening or bailing of general waste at a waste facility that has an operational area that is 1 000 m² and more.
- A waste facility that has an operational area that is less than 1 000 m² must comply with Section 4(4) of the Norms and Standards only.

The proposed construction may not cause detrimental environmental impacts. The listed waste activities will not be treated or disposed on site, and the volumes temporarily stored on site are small with at least (maximum of 6 m³ in skip bins which will be removed off site weekly by a contracted services company). However, all generators of waste (excluding generators of domestic waste), are required to adhere to the requirements set out in the NEM:WA Waste Classification Regulations of 2013. One of these requirement is for generators of waste to classify all waste generated within 180 days of generation.

The empty bags of caustic soda and lye requires a certain level of adherence to the requirements of waste classification regulations. The 2013 National Norms and Standards for Storage of Waste (such as demarcation, etc.) are to be included in the Environmental Management Programme (EMPr) and adhered to as a part of good environmental management practice for African Chemicals site.

7.6 Air Quality

The National Environmental Management: Air Quality Act 39 of 2004 (NEM:AQA), aims at identifying and providing guidelines to activities which result in atmospheric emissions which have or may have a significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage.

All activities which are listed under Section 21 (GN 893, as amended by GN 551 of 12 June 2015) of NEM:AQA, are required to apply for an Atmospheric Emissions Licence (AEL), as well as comply with the specified Minimum Emission Standards (MES) noted in the relevant category. National Ambient Air Quality Standards were also published in terms of NEM:AQA in GN 1210 on 24 December 2009 and in GN 486 on 29 June 2012 (for particulate matter with an aerodynamic diameter less than 2.5 micron metres PM2.5).

The Listed Activities stipulated in GN R893 under NEM:AQA, for the development of facilities and infrastructure for the proposed AC plant may need to comply with minimum emissions standards (MES). It is noted in the relevant category Subcategory 7.7 as (indicated in the table 8.5.1) for the general production of Caustic Soda regulations as per GN 893, **special conditions** need to be put in place. Therefore the air quality specialist will conduct a thorough investigation and make recommendations to the authority.

The following description in design indicate that: -

- **Vent-gas** from the scrubber unit is discharged to atmosphere. This is clean air and water vapour. - From the air receiver, the air moves through a desiccant dryer and dust filters, ensuring clean, dry air is supplied to the plant. This air moves through the instrument air supply header
- Scrubber unit –
- Air and water vapour – clean air

7.6.1 NEM: AQA associated Activities

- Vent-gas from the caustic dissolution tanks is directed to atmosphere. This is clean air and water vapour.
- Vent-gas from the scrubber unit is discharged to atmosphere. This is clean air and water vapour.

7.6.2 NEM: AQA triggered Activities

According to GN 893 of November 2013, List of activities which result in atmospheric emissions which have or may have significant detrimental effect on the environment, including health, social conditions, economic conditions, ecological conditions or cultural heritage (Government Gazette No. 37054) as amended lists the Sub-categories below as follows:

Table 8-5.1

Applicable Listed Activities	Proposed Plant
Subcategory 7.1 Production and or Use in Manufacturing of Chlorine Gas	
<ul style="list-style-type: none"> All installations producing or using more than 100 tons per annum. 	No trigger
Subcategory 7.2 Production of Acids	
<ul style="list-style-type: none"> The production, bulk handling and or use in manufacturing of hydrochloric and sulphuric acid in concentrations exceeding 10%. Secondary production of hydrochloric acid through regeneration. All installations producing or using more than 100 tons per annum. 	No trigger
Subcategory 7.7 Production of Caustic Soda	
All installations producing more than 10 tonnes per month	Triggers: <ul style="list-style-type: none"> The production of 5000 Liquid Metric Tonnes (LMT) caustic soda lye per month (tons per month) The Design production capacity for Caustic soda is 49% v/v concentrated products

7.7 Water Act

The National Water Act 36 of 1998 (NWA) recognises that water is a scarce resource which belongs to all people and therefore the DWS aims at implementing laws which will promote equal access to water and the use of water resources. In this regard, all activities that are listed under Section 21 of the NWA require application for a Water Use Licence (WUL) to the Department of Water and Sanitation (DWS).

Activities listed under Section 21 are:

- a) “Taking water from a water resource.
- b) Storing water.
- c) Impeding or diverting the flow of water in a watercourse.
- d) Engaging in a stream flow reduction activity contemplated in Section 36.
- e) Engaging in a controlled activity identified as such in Section 37(1) or declared under Section 38(1).
- f) Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit.
- g) Disposing of waste in a manner which may detrimentally impact on a water resource.
- h) Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process.
- i) Altering the bed, banks, course or characteristics of a watercourse.
- j) Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people.
- k) Using water for recreational purposes.”

The EIA Phase will further investigate and determine the detailed water use within the catchment area. The proposed caustic soda plant is a zero effluent plant in design. However any leaks, spillages contained in the bund will be directed to the proposed new containment infrastructure. The Water resource specialists will conduct a full study and make recommendations to the competent authority.

7.8 Environmental Management Plan

Chapter 5 of NEMA identifies various environmental management instruments and tools for application in South Africa, including Strategic Environmental Assessments (SEAs), Environmental Management Frameworks (EMFs), Environmental Impact Assessments (EIAs), Environmental Management Programmes (EMPrs), environmental risk assessments, environmental feasibility assessments, norms or standards, spatial development instruments, or any other environmental management instruments and tools that may be developed over time.

The construction of the proposed Caustic Make-Up plant triggers the need for full scoping and environmental impact assessment (S&EIA) processes as listed in GN 325, as per the requirements of the relevant acts and regulations. The final Scoping Report, Environmental Impact Assessment Report (EIR) and an **Environmental Management Programme (EMPr)** is expected to be compiled and made available to the general public for comments before they are submitted to the competent authority for consideration.

7.9 Biodiversity Act

The following main pieces of legislation relate to the management of biodiversity resources:

- National Environmental Management: Biodiversity Act 10 of 2004 (NEM:BA).
- National Environmental Management: Protected Areas Act 57 of 2003.
- National Forests Act 84 of 1998.
- Conservation of Agricultural Resources Act 43 of 1983.

The relevant legislation in terms of biodiversity relating to the caustic soda site development is NEM:BA and NEM:PA as discussed in the sub-sections below.

In terms of section 52(1) (a) of the NEM: BA, a national list of ecosystems that are threatened and in need of protection gazetted on 09 December 2011 in GN 1002. The list classifies all threatened or protected ecosystems in South Africa in terms of four categories, i.e. Critically Endangered, Endangered, Vulnerable or Protected. The proposed construction is not in the sensitive environmental area. The area is already disturbed and has several industries in the vicinity. The departmental Conservation Plan version 3.3 denotes the site as partially transformed and without any environmental sensitivity. The **Environmental Management Programme (EMPr)** will be compiled as a management tool should the Environmental Impact suggest the sensitivity in the area.

7.10 Heritage

The following applicable pieces of legislation relate to the protection of heritage resources:

- National Heritage Resources Act 25 of 1999 (NHRA).

The South African Heritage Resources Agency (SAHRA) is the responsible heritage resources authorities. In terms of Section 38 of the NHRA, SAHRA must be notified and furnished with details regarding the location, nature and extent of any proposed development categorised as —

- a) *“The construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length.*
- b) *The construction of a bridge or similar structure exceeding 50 m in length.*
- c) *Any development or other activity which will change the character of a site—*
 - (i) Exceeding 5 000 m² in extent; or**
 - (ii) Involving three or more existing erven or subdivisions thereof; or*
 - (iii) Involving three or more erven or divisions thereof which have been consolidated within the past five years; or*
 - (iv) The costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority.*
- d) *The re-zoning of a site exceeding 10 000 m² in extent.*
- e) *Any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority.”*

The EMPr will cover the heritage resource management in the likely event or chance that heritage resource is encountered during construction phase.

7.11 Health and Safety Risk

In South Africa, risk assessments are carried out under the legislation of two separate acts, each with different requirements, conducting a number of Occupational Health Risk Assessments, in order to adhere to the OHS Act (85 of 1993) and Regulations. These are discussed in the subsections that follow.

7.11.1 EIA Risk Assessment Emergency Preparedness

Risk assessments regarding public health and safety from major incidents under NEMA are associated with EIAs and must be performed in accordance with NEMA. In this instance, impacts on the environment must be evaluated and mitigation proposed by the specialist conducting the investigation. Section 30 of NEMA deals with the control of emergency incidents where an incident is defined as an unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed.” NEMA goes further by giving instructions with regard to reporting such an incident and limiting the effects of such an incident regarding risks to public health and the environment. The identification and mitigation of potential Section 30 incidents is thus crucial in the risk assessment of the project.

The MHI risk assessment will serve to review all proposed safety measures. Additional measures, if required, will be implemented on the basis of recommendations from the MHI risk assessment. A HAZOP (hazard and operability study) will be undertaken prior to the commencement of construction. This involves a detailed analysis of all production processes and safety systems

At the EIA phase there is insufficient detailed information to complete a Major Hazard Installation (**MHI**) risk assessment in full accordance with the MHI Regulations. For example, emergency plans and Emergency preparedness will be developed and the final designs and a full Emergency preparedness will be included in the Environmental Impact Report and submitted with the final EIA to the relevant authority for consideration. Under these circumstances, a risk assessment would be conducted generally in accordance with the prescribed topics of the MHI Regulations. The MHI risk assessment is not a requirement for EIA approval.

The EIA phase determines if there are any fatal flaws that will prevent the project proceeding and the EIA risk assessment should have a statement from a professional person covering:

- The identification of potential NEMA Section 30 incidents.

- The determination of whether the proposed AC project is likely to be considered a MHI.
- If found to be an MHI, the determination of whether the proposed AC project would meet the requirements of the MHI Regulations and whether the risks could be engineered or managed to an acceptable level.
- The determination of whether there any factors that will prevent the project from proceeding to the next phase of construction or alternatively whether the project could continue under certain conditions or with mitigation.
- The determination of whether there are any special requirements that the local authorities should be aware of when evaluating the proposal.
- AC will investigate these issues and will be detailed further during the EIA phase

7.12 MHI Risk Assessment

The Occupational Health and Safety Act 85 of 1993 (OHSA) and the MHI Regulations (GN R692, 30 July 2001) require that a MHI risk assessment be undertaken for installations which have on their premises a quantity of a substance which can pose a significant risk to the health and safety of employees and the public.

The Department of Labour requires that a MHI risk assessment be undertaken **prior to** construction to determine if the project can be constructed and operated with all risks to employees and the public at an acceptable level. The MHI report must be prepared by a registered Department of Labour Approved Inspection Authority. The risk assessment undertaken during the EIA would be updated to include recalculations for the changes indicated by the Environmental Authorisation and would include all the required elements of the MHI Regulations not completed in the EIA risk assessment, such as evaluation of emergency planning.

The MHI risk assessment must be submitted to the Department of Labour and the City of Ekurhuleni Municipality: Disaster Management / Fire and Rescue/ Emergency Services

7.13 Planning

In the Gauteng province, there are several relevant provincial planning laws such as Town Planning Scheme 2014, Site Development Plan and Local Spatial Development Framework (LSDF) that contain the terms of reference defined in Town and Planning Schemes of 2014. The applicable authority in terms of planning issues is the City of Ekurhuleni Metropolitan Municipality: City Planning.

There is a need to determine compliance against the following piece of local planning policies

- Gauteng Ridges Guideline;
- Gauteng pollution buffer zone guideline;
- GDARD Requirements for Biodiversity Assessments V3
- Red List Plant Guidelines

7.13.1 Municipal Bylaws and Permits

The following permits /licences will need to be obtained from the City of Ekurhuleni Metropolitan Municipality in terms of the proposed project:

- Discharge of sewage to the sewage disposal system.
- Discharge of industrial effluent to the sewage disposal system.
- Water supply permit /agreement for potable water and firefighting requirements.
- Electricity supply permit
- General and /or industrial waste removal permit /agreement for the removal of general and /or industrial waste (any industrial waste for which waste removal contractors are not used).
- Scheduled trade permit in terms of the environmental health bylaws.

The following permits may also be required:

- Permits related to export of scheduled substances (GN R92) in terms of the International Trade Administration Act 71 of 2002.
- Licence for the supply of hazardous substances in terms of the Hazardous Substances Act 15 of 1973.
- Compliance and certificates covered by the SANS Regulations

7.13.2 Local Policies, Programmes and Plans

This report has considered a plethora of policies; programmes and plans are applicable to the proposed project, the most relevant being:

- Gauteng Environmental Management Framework (GEMF) 2015
- City of Ekurhuleni Metropolitan Municipality Plan (IDP).
- The operation of industries located in the Industrial Development Zones and SEZ
- Ekurhuleni Metropolitan Municipality AQMP - Air Quality Management Plan for the Ekurhuleni Metropolitan municipality

8 Project Need and Desirability

In accordance with Item 2.(1)(f) in Appendix 2 of GN 326, this chapter will provide 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.

The DEA has published a “Guideline on Need and Desirability” (DEA, 2017) which contains best practice guidelines for the consideration of the need and desirability of a development involving NEMA listed activities. Need and desirability based on the principle of sustainability as set out in the Constitution and in National Environmental Management Act. Addressing the need and desirability of a development is a way of ensuring sustainable development – in other words, is the development ecologically sustainable and socially and economically justifiable. – and ensuring the simultaneous achievement of the triple bottom-line.

The guideline sets out a list of questions which should be addressed when considering need and desirability of a proposed development based on Section 24 of the Constitution which calls for the securing of “ecological sustainable development and use of natural resources” and the promotion of “justifiable economic and social development”. In terms of the proposed caustic soda development, the guideline list of questions are answered in **Table 9-1 below** with reference to the relevant spatial plans, including the EMF, IDP and SDF. Also of relevance to this chapter is the project motivation outlined in **Section 9.2**.

Table 9-1 Questions from the Guideline on Need and Desirability

No	Questions from the Guideline on Need and Desirability (DEA, 2017)	Applicability to the Project
	“securing ecological sustainable development and use of natural resources” (Section 24 of the Constitution	
	1. How will this development (and its separate elements/aspects) impact on the ecological integrity of the area?	
1.1	How were the following ecological integrity considerations taken into account :- 1.1.1 Threatened Ecosystems. 1.1.2 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. 1.1.3 Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs). 1.1.4 Conservation targets. 1.1.5 Ecological drivers of the ecosystem. 1.1.6 Environmental Management Framework. 1.1.7 Spatial Development Framework. 1.1.8 Global and international responsibilities relating to the environment (e.g. RAMSAR sites, Climate Change, etc.).	The baseline ecological studies conducted before exists The site is already disturbed and there are No threatened ecosystems, sensitive, vulnerable or stressed ecosystems as per the departmental Conservation plan version 3.3
1.2	How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity? What measures were explored to firstly avoid these negative impacts, and where these negative impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	
	Questions from the Guideline on Need and Desirability (DEA, 2017)	Applicability to the Project

No	Questions from the Guideline on Need and Desirability (DEA, 2017)	Applicability to the Project
I.3	How will this development pollute and/or degrade the biophysical environment? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	<p>The biophysical environmental attributes will be developed</p> <p>Water: The specialist studies will be conducted during EIA and included in the Environmental Impact Report with recommendations</p> <p>Air: An AQIA (Impact assessment) for the current application will be undertaken parallel to the EIA process (refer to Section 15 below)</p>
I.4	What waste will be generated by this development? What measures were explored to firstly avoid waste, and where waste could not be avoided altogether, what measures were explored to minimise, reuse and/or recycle the waste? What measures have been explored to safely treat and/or dispose of unavoidable waste?	<p>The following waste streams are expected to be produced by the plant:</p> <ul style="list-style-type: none"> ▪ Storm water runoff. ▪ Tank overflow or draining Spillages – with Mixture of water and low concentration of caustic which will be contained ▪ General waste from the empty bags of caustic soda prills and lye <ul style="list-style-type: none"> - Measures: - Wherever possible, the liquid streams are to be recycled back into the system as measure to re-use - Services contracted company will provide guidance for site re-cycle and reuse of caustic empty bags ▪ Vent-gas from the caustic dissolution tanks is directed to atmosphere. This is clean air and water vapour. ▪ Vent-gas from the scrubber unit is discharged to atmosphere. This is clean air and water vapour. <p>Liquid effluent and atmospheric emissions (refer to Sections 7.6.2).</p>
I.5	How will this development disturb or enhance landscapes and/or sites that constitute the nation’s cultural heritage? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?	<p>ERF 198 Chloorkop-IR site for proposed development is surrounded by industries and similar chemical industries, visual impact on the landscape is anticipated to be limited (refer to Section 15.6 below). A visual impact assessment will be undertaken as part of the EIA and recommended mitigation measures included in the EMPr</p> <p>The EMPr for the proposed development will include the provision that in the unlikely event that any potential cultural heritage resources</p>

No	Questions from the Guideline on Need and Desirability (DEA, 2017)	Applicability to the Project
		are discovered during construction, construction works should halt.
1.6	<p>How will this development use and/or impact on non-renewable natural resources? What measures were explored to ensure responsible and equitable use of the resources? How have the consequences of the depletion of the non-renewable natural resources been considered? What measures were explored to firstly avoid these impacts, and where impacts could not be avoided altogether, what measures were explored to minimise and remedy (including offsetting) the impacts? What measures were explored to enhance positive impacts?</p>	<p>No other new technology mix identified. The EIA will deal with the alternative technology and recommend any measures to enhance positive impacts (see details on Technology below)</p>
1.7	<p>How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part? Will the use of the resources and/or impact on the ecosystem jeopardise the integrity of the resource and/or system taking into account carrying capacity restrictions, limits of acceptable change, and thresholds? What measures were explored to firstly avoid the use of resources, or if avoidance is not possible, to minimise the use of resources? What measures were taken to ensure responsible and equitable use of the resources? What measures were explored to enhance positive impacts?</p> <p>1) Does the proposed development exacerbate the increased dependency on increased use of resources to maintain economic growth or does it reduce resource dependency (i.e. dematerialised growth)? (note: sustainability requires that settlements reduce their ecological footprint by using less material and energy demands and reduce the amount of waste they generate, without compromising their quest to improve their quality of life).</p> <p>2) Does the proposed use of natural resources constitute the best use thereof? Is the use justifiable when considering intra- and</p>	<p>The primary inputs into the proposed production process are:</p> <p>IN:-</p> <ul style="list-style-type: none"> ▪ Caustic flakes in 1-ton bulk bags ▪ Demin water supply (from New RO plant to be installed) ▪ Portable Water supply From the Water authority <p>OUT:-</p> <ul style="list-style-type: none"> ▪ Caustic sump waste – to containment infrastructure to be constructed for any caustic sump waste – Waste containment infrastructure ▪ Caustic lye tanker – load out ▪ Caustic lye IBC load out <p>(Refer to Section 6.7).</p>

No	Questions from the Guideline on Need and Desirability (DEA, 2017)	Applicability to the Project
	<p>intergenerational equity, and are there more important priorities for which the resources should be used (i.e. what are the opportunity costs of using these resources for the proposed development alternative?).</p> <p>3) Do the proposed location, type and scale of development promote a reduced dependency on resources?</p>	
1.8	<p>How were a risk-averse and cautious approach applied in terms of ecological impacts?</p> <p>1) What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?</p> <p>2) What is the level of risk associated with the limits of current knowledge?</p> <p>3) Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?</p>	<p>The ecological impacts studies were conducted for the primary area and baseline data exists. There were no wetlands or ecological resources of significant value within ERF 1981R.</p>
1.9	<p>How will the ecological impacts resulting from this development impact on people's environmental right in terms following:</p> <p>1) Negative impacts: e.g. access to resources, opportunity costs, loss of amenity (e.g. open space), air and water quality impacts, nuisance (Noise, odour, etc.), health impacts, visual impacts, etc. What measures were taken to firstly avoid negative impacts, but if avoidance is not possible, to minimise, manage and remedy negative impacts?</p> <p>2) Positive impacts: e.g. improved access to resources, improved amenity, improved air or water quality, etc. What measures were taken to enhance positive impacts?</p>	<p>The following specialist studies will be undertaken as part of the EIA in this application:</p> <ul style="list-style-type: none"> ▪ Health and safety risk/ Emergency Preparedness and the (MHI) ▪ Air quality Impact Assessment ▪ Waste Management ▪ Surface and groundwater Assessment ▪ Traffic Impact Assessment (TIA) ▪ Visual Impact and HIA ▪ Socio-economic. ▪ Public Participation <p>Create employment opportunities in close proximity to other employment opportunities with the potential that will result in densification and the achievement of thresholds in terms public transport.</p> <p>Complement other industrial uses in the area.</p>
1.10	<p>Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio economic impact - (e.g. on livelihoods, loss of heritage site, opportunity costs, etc.)?</p>	<p>Due to the existence of other industrial operation in the vicinity of the site, the site is extensively disturbed and no direct ecological impacts are anticipated.</p>

No	Questions from the Guideline on Need and Desirability (DEA, 2017)	Applicability to the Project
		Potential impacts on Socio-economy and impacts on livelihoods will be assessed during the EIA phase specialist studies.
1.1 1	Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?	As above.
1.1 2	Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the “best practicable environmental option” in terms of ecological considerations?	The site has been determined as suitable for industrial development of this nature as per the Zoning certificate – Industrial type 1 The primary area is a MHI and has in place an approved Emergency Response Procedure
1.1 3	Describe the positive and negative cumulative ecological/biophysical impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and existing and other planned developments in the area?	Same as above
“promoting justifiable economic and social development” (Section 24 of the Constitution)		
2.1	What is the socio-economic context of the area, based on, amongst other considerations, the following considerations? 1) The IDP (and its sector plans’ vision, objectives, strategies, indicators and targets) and any other strategic plans, frameworks of policies applicable to the area. 2) Spatial priorities and desired spatial patterns (e.g. need for integrated of segregated communities, need to upgrade informal settlements, need for densification, etc.). 3) Spatial characteristics (e.g. existing land uses, planned land uses, cultural landscapes, etc.), and 4) Municipal Economic Development Strategy (“LED Strategy”).	The site has been assessed as suitable for industrial development in terms of the Local SDF ERF 1981R is zoned as an Industrial type 1. The IDP and SDF both identify the importance of achieving sustainable development objectives and reducing the high levels unemployment and poverty in the area
2.2	Considering the socio-economic context, what will the socio-economic impacts be of the	A socio-economic impact assessment will be undertaken during the EIA phase.

No	Questions from the Guideline on Need and Desirability (DEA, 2017)	Applicability to the Project
	<p>development (and its separate elements/aspects), and specifically also on the socio-economic objectives of the area?</p> <p>1) Will the development complement the local socio-economic initiatives (such as local economic development (LED) initiatives), or skills development programs?</p>	<p>This will be responded to during the EIA phase. (see section on Economic below)</p>
2.3	<p>How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?</p>	<p>This will be responded to during the EIA phase as above</p>
2.4	<p>Will the development result in equitable (intra- and inter-generational) impact distribution, in the short- and long-term? Will the impact be socially and economically sustainable in the short- and long-term?</p>	<p>This will be responded to during the EIA phase. As above</p>
2.5	<p>In terms of location, describe how the placement of the proposed development will:</p> <p>1) Result in the creation of residential and employment opportunities in close proximity to or integrated with each other.</p> <p>2) Reduce the need for transport of people and goods pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport).</p> <p>3) Result in access to public transport or enable non-motorised and pedestrian transport (e.g. will the development result in densification and the achievement of thresholds in terms public transport).</p> <p>4) Compliment other uses in the area.</p> <p>5) Be in line with the planning for the area.</p> <p>6) For urban related development, make use of underutilised land available with the urban edge.</p> <p>7) Optimise the use of existing resources and infrastructure.</p> <p>8) Opportunity costs in terms of bulk infrastructure expansions in non-priority areas (e.g. not aligned with the bulk infrastructure planning for the settlement that reflects the spatial reconstruction priorities of the settlement).</p> <p>9) Discourage "urban sprawl" and contribute to compaction/densification.</p>	<p>As the proposed caustic soda project is located in an Industrial type 1 area, the proposed development will:</p> <ul style="list-style-type: none"> ▪ Create employment opportunities in close proximity to other employment opportunities with the potential that will result in densification and the achievement of thresholds in terms public transport. ▪ Complement other industrial uses in the area. ▪ Be in line with the planning for the area. ▪ Make use of underutilised land available within the urban edge. ▪ Optimise the use of services and infrastructure in place ▪ Opportunity for reduction of costs will be realised in terms of the installation of infrastructure and services. ▪ Discourage "urban sprawl" and contribute to compaction/densification within the Industrial areas. ▪ Contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs. ▪ Encourage environmentally sustainable land development practices and processes.

No	Questions from the Guideline on Need and Desirability (DEA, 2017)	Applicability to the Project
	<p>10) Contribute to the correction of the historically distorted spatial patterns of settlements and to the optimum use of existing infrastructure in excess of current needs.</p> <p>11) Encourage environmentally sustainable land development practices and processes.</p> <p>12) Take into account special locational factors that might favour the specific location (e.g. the location of a strategic mineral resource, access to the port, access to rail, etc.).</p> <p>13) The investment in the settlement or area in question will generate the highest socio-economic returns (i.e. an area with high economic potential).</p> <p>14) Impact on the sense of history, sense of place and heritage of the area and the socio-cultural and cultural-historic characteristics and sensitivities of the area.</p> <p>15) In terms of the nature, scale and location of the development promote or act as a catalyst to create a more integrated settlement?</p>	<ul style="list-style-type: none"> ▪ Take into account special locational factors, namely: the benefits of operation near the SEZ and the IDZ, access to the nearby OR airport and access to rail/ main corridors such as N1/ N3 ▪ Ekurhuleni Metropolitan area has a high economic potential
2.6	<p>How were a risk-averse and cautious approach applied in terms of socioeconomic impacts?</p> <p>1) What are the limits of current knowledge (note: the gaps, uncertainties and assumptions must be clearly stated)?</p> <p>2) What is the level of risk (note: related to inequality, social fabric, livelihoods, vulnerable communities, critical resources, economic vulnerability and sustainability) associated with the limits of current knowledge?</p> <p>3) Based on the limits of knowledge and the level of risk, how and to what extent was a risk-averse and cautious approach applied to the development?</p>	This will be responded to during the EIA phase.
2.7	<p>How will the socio-economic impacts resulting from this development impact on people's environmental right in terms following:</p> <p>1) Negative impacts: e.g. health (e.g. HIV-Aids), safety, social ills, etc. What measures were taken to firstly avoid negative impacts, but if avoidance</p>	This will be responded to during the EIA phase.

No	Questions from the Guideline on Need and Desirability (DEA, 2017)	Applicability to the Project
	<p>is not possible, to minimise, manage and remedy negative impacts? 2) Positive impacts. What measures were taken to enhance positive impacts?</p>	
2.8	<p>Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio economic impacts will result in ecological impacts (e.g. over utilisation of natural resources, etc.)?</p>	This will be responded to during the EIA phase.
2.9	<p>What measures were taken to pursue the selection of the “best practicable environmental option” in terms of socio-economic considerations?</p>	This will be responded to during the EIA phase.
2.1 0	<p>What measures were taken to pursue environmental justice 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 (who are the beneficiaries and is the development located appropriately)? (i) Considering the need for social equity and justice, do the alternatives identified, allow the “best practicable environmental option” (BPEO) to be selected, or is there a need for other alternatives to be considered?</p>	This will be responded to during the EIA phase.
2.1 1	<p>What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination?</p>	This will be responded to during the EIA phase.
2.1 2	<p>What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?</p>	This will be responded to during the EIA phase by Health and Safety Specialist as well the undergoing Emergency Preparedness Plan and MHI report will address this effectively
2.1 3	<p>What measures were taken to: 1) Ensure the participation of all interested and affected parties (I&AP's) 2) Provide all people with an opportunity to develop the understanding, skills and capacity</p>	This will be responded to during the EIA phase.

No	Questions from the Guideline on Need and Desirability (DEA, 2017)	Applicability to the Project
	<p>necessary for achieving equitable and effective participation.</p> <p>3) Ensure participation by vulnerable and disadvantaged persons.</p> <p>4) Promote community wellbeing and empowerment through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.</p> <p>5) Ensure openness and transparency, and access to information in terms of the process.</p> <p>6) Ensure that the interests, needs and values of all interested and affected parties were taken into account, and that adequate recognition were given to all forms of knowledge, including traditional and ordinary knowledge.</p> <p>7) Ensure that the vital role of women and youth in environmental management and development were recognised and their full participation therein were be promoted?</p>	
2.1 4	<p>Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community (e.g. a mixture of low middle-, and high-income housing opportunities) that is consistent with the priority needs of the local area (or that is proportional to the needs of an area)?</p>	<p>This is being addressed by Public Participation and all issues and response document will cover all the aspects</p>
2.1 5	<p>What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures have been taken to ensure that the right of workers to refuse such work will be respected and protected?</p>	<p>This will be responded to during the Public Participation phase, where the project will be announced both in the print media, posters and other means of contact such telephones and invitation to the public engagements.</p>
2.1 6	<p>Describe how the development will impact on job creation in terms of, amongst other aspects:</p> <p>1) The number of temporary versus permanent jobs that will be created.</p> <p>2) Whether the labour available in the area will be able to take up the job opportunities (i.e. do</p>	<p>This will be responded to during the EIA phase.</p>

No	Questions from the Guideline on Need and Desirability (DEA, 2017)	Applicability to the Project
	<p>the required skills match the skills available in the area).</p> <p>3) The distance from where labourers will have to travel.</p> <p>4) The location of jobs opportunities versus the location of impacts (i.e. equitable distribution of costs and benefits).</p> <p>5) The opportunity costs in terms of job creation (e.g. a mine might create 100 jobs, but impact on 1000 agricultural jobs, etc.).</p>	
2.1 7	<p>What measures were taken to ensure:</p> <p>1) That there were intergovernmental coordination and harmonisation of policies, legislation and actions relating to the environment.</p> <p>2) That actual or potential conflicts of interest between organs of state were resolved through conflict resolution procedures?</p>	This will be responded to during the EIA phase.
2.1 8	<p>What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage?</p>	This will be responded to during the EIA phase.
2.1 9	<p>Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left?</p>	This will be responded to during the EIA phase.
2.2 0	<p>What measures were taken to ensure that he costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects will be paid for by those responsible for harming the environment?</p>	This will be responded to during the EIA phase.
2.2 1	<p>Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified (in terms of all the different elements of the development and all the different impacts being proposed), resulted in the selection of the best practicable environmental option in terms of socio-economic considerations?</p>	This will be responded to during the EIA phase.

No	Questions from the Guideline on Need and Desirability (DEA, 2017)	Applicability to the Project
2.2 2	Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area?	This will be responded to during the EIA phase.

9 ALTERNATIVES

Item 2(1) (g) in Appendix 2 of GN 326 stipulates that the Scoping Report must provide a full description of the process followed to reach the preferred activity, site and location of the development footprint within the site. This chapter meets the requirements of Items 2.(1)(g)(i) and 2.(1)(g)(x), by providing details of all the alternatives considered and a motivation where alternatives were not considered.

The following alternatives are discussed in the sub-sections below:

- Technology.
- Location.
- Layout.
- No-go.

9.1 DESIGN AND TECHNOLOGY

African Chemicals supplies caustic soda in solid flake as well as in lye form. The caustic flakes and water in the Caustic Dissolution Tank are mixed by the Caustic Dissolution Tank Agitator, to ensure homogenous dissolution. The caustic flakes dissolution is exothermic, causing heat generation during dissolution. The Caustic Dissolution Tank Fan draws out the hot water vapours that form in the Caustic Dissolution Tank due to the heat of dissolution. Removing the water vapour which allows dry air to be pulled through the Caustic Metering Screw Feeder opening. This prevents the caustic solids in the Caustic Metering Screw Feeder from getting wet, preventing blockages. The excess heat is removed by circulating the liquid caustic solution (caustic lye) through an external plate heat exchanger, the Caustic Dissolution Cooler, to maintain a temperature in the Caustic Dissolution Tank of 120 °C

9.2 LOCATION

The site location was selected based on the following factors:

- Proximity to similar chemical producing industries
- Proximity to the OR Tambo and other logistic such as N1/N3 corridors
- Allows for lower logistics costs when transporting raw materials to site.
- Allows access to other provinces shipping and international shipping routes for product export.
- Product demand in Gauteng and surrounding such Mpumalanga and North West
- Allows AC to service markets more cost-effectively than producers in the other areas
- Benefits associated with being situated within an Industrial zone
- Any other vacant land nearby and alternatives were considered

9.3 Alternative Site location



Alternative site layouts were considered in terms of a preliminary risk and logistics assessment as part of the feasibility study. The health and safety risk assessment (MHI) which is ongoing, will in the next phase of the EIA process be undertaken for modelling to consider the risk levels with respect to processes such as liquefaction and caustic & lye storage and recommendations from the study may result in further amendments to the layout to mitigate potential risks to an acceptable level.



The above site map is included as the further possible site identification for utilisation of parking and any other related off-site heavy-duty vehicle and transport such as trucks and tankers.

9.4 NO-GO ALTERNATIVE

The no-go alternative implies the continuation of the status quo in terms of development potential, zoning and management. In the case of the AC site, this would mean leaving the land as is i.e. vacant. However, the site has been zoned for industrial use (**INDUSTRIAL Type 1**), and is in line with the Local SDF. The site is extensively disturbed and is partially transformed and without any environmental sensitivity. It seems likely that industrial development would have taken place on the site at some stage in the future

The site is not a sensitive area from an environmental resources point of view. Potential negative risks and impacts associated with the proposed development would not apply in a no-go situation. The potentially highly significant positive socio-economic impacts would also not be realised if the area is not developed.

The benefits associated with the development currently outweigh the potential negative impact associated with the project. As such, the no go alternative is not preferred by the EAP. The “no-go” alternative is therefore not considered the preferred alternative.

9.5 COMPARATIVE ANALYSIS OF ALTERNATIVES

Alternatives	Description	Comparative Comments on project implementation
Location or site alternatives	The property on which the proposal is intended and possible location for certain activities within the property. This can also include other sites to commission the project.	Site alternatives were investigated by the African Chemicals during the feasibility phase of the project. As the tenant the landowner considered other site, but due to significant environmental impacts they were excluded from further investigations. The remaining site is now going through EIA processes to consider the environmental impacts.

Layout / Design alternatives	Placement of land uses and infrastructure within the area available for development to optimise the site and also provide environmental safeguard to sensitive features identified. Design alternatives could also include different architectural designs of the plant and the neighbours, engineering designs of infrastructure services and roads	These alternatives will be investigated during the EIA phase after the finalization of all the specialist studies.
Technology alternatives	The plant is designed to be an efficient plant with minimal municipal electricity demand. The provision of efficient technology considered.	Technology alternatives will be investigated during the EIA phase after the finalization of all the specialist studies
No-go option	The status quo remains and no development takes place.	The no-go option will not be further investigated as African Chemicals is a potential tenant to develop the area

10 Environmental Attributes

This chapter will meet the requirements of Item 2.(1)(g)(iv) in Appendix 2 of GN 326, by providing details of the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects. A general description of the status quo of the receiving environment in the project area provides the context within which the EIA is being conducted and allows for an appreciation of sensitive environmental features and possible receptors of the effects of the proposed project.

10.1 Land use

The primary area is situated on the existing Industrial urban area of Kempton Park Chloorkop and approximately 5km to the South of the Central Business District of Kempton Park. The main arterial roads providing access to Chloorkop are:

- Zuurfontein Road (Route M39). This is a north-south route just to the east of Chloorkop that links Tembisa to the Isando industrial area and to central Kempton Park (via CR Swart Road).
- Chloorkop/Allandale Road (Route R561/Route M39). This is an east-west route just to the north of Chloorkop that links Zuurfontein Road to National Road N1 in Midrand.
- Modderfontein Road (Route R25). This road, which interchanges with Zuurfontein Road 2 kilometres south of Chloorkop, links National Road N3 in Edenvale to the Route R21 freeway in northern Kempton Park. These arterial roads link the Chloorkop site to national and regional freeway systems, namely National Route N1, National Route N3, National Route N12, Route R21 and Route R23

In terms of land use, the quaternary catchment area is characterised by intense past land-use modifications from agriculture, mining, tourism, residential, recreational and industrial development activities. The primary area is bordered by mixed-use industrial developments as well as residential areas and open areas (refer to **map Fig 5.1 above**). The broader surrounding area contributes significantly to the storm water drainage that runs through the study site.

The developable land has a surface area of approximately 18 thousand square meters, although the area to be developed will be less (based on the required coverage factor). The terrain across the primary area is generally very flat with a gradual slope towards the south from an elevation of approximately 67 metres above mean sea level (mamsl) on the northern boundary to approximately 42 mamsl on the southern boundary.

10.2 Geology and Soils

Batach Holdings will be conducting a geotechnical investigation in a specialist report for the proposed Caustic soda plant, the results of which will be presented in the *Geotechnical Investigation Report for the AC Caustic Soda Plant on Erven 198* during the EIA phase

10.3 Surface and Groundwater

Batach Holdings will be conducting an Assessment of Anticipated Geohydrological Conditions for the proposed caustic soda below within the Quaternary area and recommendations will be submitted to the competent authority for taking informed decision. The EIA report (EIR) and a Water Quality Monitoring Plan will be developed and amended accordingly during the EIA.

10.4 Air Quality

Kempton Park, Chloorkop constitutes one of the highly industrialised areas in the country, consisting of various types of industries including Air liquid, pulp and paper mills, chemicals, iron, steel, fertiliser, mineral mining, cement, blasting etc. In relatively close proximity to the industrial areas are residential areas, both township and urban, in which various domestic activities are conducted in the vicinity. The main sources of air pollution within the area are industries and vehicle emissions with other sources include biomass burning, ambient monitoring stations located in the nearby areas, which are well regulated by Ekurhuleni Metropolitan Municipality (EMM).

The pollutants currently measured by these stations include such as:

- Chlorine
- Sulphur dioxide (SO₂).
- Nitrogen dioxide (NO₂).
- Particulate matter with an aerodynamic diameter of less than 10 microns (PM₁₀).
- Particulate matter less than 2.5 microns (PM_{2.5}).

- Ozone (O₃).

The monitoring stations also continuously monitor meteorological data, including: wind direction and speed, temperature, relative humidity and rainfall. The real time monitoring network consisting of stations in the Kempton area that monitor meteorology as well as:

- SO₂.
- Total reduced sulphur (TRS).
- PM₁₀.

AC is required to comply with relevant local, national and international air quality standards and regulations as mentioned above.

10.5 Noise

Noise levels in the study area are currently generated mostly by vehicular traffic and surrounding industries. Noise impact may result during the construction phase such as the operation of machinery and equipment, as well as construction vehicle and traffic noise. The construction and operational phases of the proposed caustic soda development are expected to have a low cumulative impact on the noise levels in the surrounding area. On-going noise monitoring to ensure compliance with legislated requirements will be included in the EMPr.

10.6 Visual Landscape

As the site is surrounded mainly by other industries with similar chemical products, the aesthetic character of the landscape is not anticipated to be significantly impacted by the proposed development as the area is already disturbed. During the construction phase, the inadequate storage of material, equipment and waste may result in a potential visual impact. In terms of the operational phase, photographs of similar plants and typical plant layouts will be shown. A visual impact assessment specialist study to assess potential visual impacts associated with the plant will be undertaken to inform the EIA report and management and mitigation measures, if required, will be included in the EMPr.

10.7 Heritage

The area footprint as indicated in (**Section 7.10 above**) necessitates the heritage specialist input to ensure that through the development of the area, all the heritage resources which may be affected are conserved.

10.8 Existing Infrastructure and Services

The specialist engineering studies will be conducted for Installation of the necessary infrastructure and services such as: -

- Water mains. Tie-ins
- Storm water infrastructure.
- Sewer infrastructure.
- Internal electrical infrastructure.
- Other infrastructure such as the entrance gate complex and ICT infrastructure.

10.9 Storm Water

AC is responsible for constructing its own attenuation area on site that will tie into the existing storm water infrastructure. A Storm Water Management Plan will be prepared for the caustic soda site and the storm water management measures and guidelines stipulated by the City of Ekurhuleni Metropolitan will inform the EMPr for the proposed project.

10.10 Roads

African Chemicals plans to import caustic soda and transport it to the proposed plant/ site for dissolution into lye form and distribute to North West and Mpumalanga. It is assumed that 50% of the vehicles will use Allendale Road, N1 and N4 to travel to North West and the remainder will use M39, R21 and N12 to travel to Mpumalanga (Oaron Consulting Engineers, TIA 2020). A traffic study is currently undertaken and completed for the proposed Caustic Soda development to inform the EIA report (refer to **Chapter, TIA Oaron Consulting Engineers 2020**).

Capacity	The maximum sustainable hourly flow rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of a lane or roadway during a given time period under prevailing roadway, environmental, traffic and control conditions.
Volume	The total number of vehicles or other roadway users that pass over a given point or section of a lane or roadway during a given time interval, often 1 hour.
Volume to Capacity (v/c) Ratio	The ratio of flow rate to capacity for a system element.
Level of Service (LOS score)	A numerical output from a traveller perception model that typically indicates the average rating that travellers would give a transportation facility or service under a given set of conditions.

Source: *Capacity Analysis Terminology* (Oarona, TIA, 2020)

10.11 Socio-economic Environment

The vision for African Chemicals, aims to empower African industrial consumers with quality chemical products and services in a manner that reduces and optimizes their total costs. This specifically pertains to satisfying the general African customers with their needs within proximity. African Chemicals intends increasing employment opportunities and further contribute to the local economic development within the respective domestic economy. The Socio Economic study will determine the benefits of such project and consider the positive impacts to the environment and local communities.

11 Public Participation Process

This chapter will meet the requirements of Item 2.(1)(g)(ii) in Appendix 2 of GN 326, by providing details of the public participation process to be undertaken in terms of Regulation 41 of the Amendments to the 2014 EIA Regulations (GN 326, 07 April 2017) and will include copies of the supporting documents and inputs.

The purpose of the public participation process is to ensure that the issues, inputs and concerns of interested and affected parties (I&APs) are taken into account during the decision-making process. This requires the identification of I&APs (including authorities, technical specialists and the public), communication of the process and findings to these I&APs and the facilitation of their input and comment on the process and environmental impacts, including issues and alternatives that are to be investigated. A successful public participation process is one that is inclusive, actively engages the public and provides ample opportunity for the public to participate in the application process.

Batach Environment has taken into cognisance the requirements for public participation in terms of the EIA Regulations (GN 326, 07 April 2017) and the Guideline on Public Participation in the EIA Process (GN 807, 10 October 2012) and will strive to ensure that the public participation principles are upheld. Refer to **Table II-1 below**, which outlines how the public participation will be undertaken for this project, which will meet the requirements of Chapter 6 of the 2014 EIA Regulations. Activities to be undertaken as part of the public participation process are described in the sub-sections below.

11.1 Provincial Authorities Pre-Application Meeting

Although a pre-application meeting is not compulsory for compliance, however the meeting was held with Gauteng Department of Agriculture and Rural Development GDARD. The purpose of the meeting was to introduce the project and the proposed EIA process.

11.2 Identification of Interested and Affected Parties

The I&AP databases has been developed and merged to create a comprehensive database of relevant authorities and key stakeholders in the area. Key stakeholders include: commenting authorities, the City of Ekurhuleni municipality, ward councillors, local ratepayers and environmental associations, adjacent landowners and occupiers or tenants. I&AP's database will be updated on a regular basis during the course of the public participation process as additional I&APs are identified.

11.3 Project Announcement

Interested and Affected Parties (I&APs), were informed of the Proposed Development and have been requested to register and submit their comments to the EAP and the Public participation office. The Background Information Document (BID) and the Comment sheet has been shared with the interested and affected parties.

11.3.1 Newspaper Advertisement

An advertisement was placed in the local newspaper to notify the broader public of the project and the availability of all documentation such as Background Information document (BID)

- The 3 newspapers (The Star) - national newspaper on the 08 April 2021), (**Appendix C1**)
- The Ekurhuleni News (08 April 2021),
- The Kempton Express on the (14 April 2021)

11.3.2 Public Notices

Public notices - On-site notices placed at conspicuous locations, detailing the Proposed Development, and placed in locations visible to and accessible by the public nearby additional locations such libraries and in highly frequented public areas. The process and an invitation to register as an I&AP and provide comment on the Proposed Development. (**Appendix C2**)

11.3.3 Letters to Key Stakeholders and Authorities

Relevant authorities, officials and key stakeholders were sent notification letters inviting them to register, providing notification of the availability of each document and inviting submission of comments. (**Appendix C3**)

11.3.4 Distribution of Reports for Comment

A period of 30 calendar days (**05 June 2021 to 06 July 2021**) will be allowed to I&As for the review and commenting phase of the DSR. The availability of the DSR will be announced by means of notification to all identified stakeholders on the distribution list

Note: The proof of notification of the availability of the DSR will be provided in the final submission. The draft versions of the Scoping Report (i.e. this report) and the EIA Report (EIR) will be distributed to the relevant authorities and key I&As

Hard copies of the draft reports will be distributed as follows for review and comment:

- Kempton Park Main Community Library.
- GDARD
- DEA.
- DWS.
- City of Ekurhuleni Metropolitan Municipality.
- Department of Transport.
- Department of Health.

Digital copies of the draft reports will be made available on the Batach Holdings and African Chemicals website and emailed to I&As on request. All registered I&As and relevant authorities will be notified via written correspondence of the availability of the draft reports for review and comment, and provided with a period of 30 days to submit comments. Meetings will be held with I&A's as and when and if the need arises.

11.3.5 Revised Reports

All comments received on the draft reports will be incorporated into revised/ final reports, which will be submitted to GDARD (via the online portal) and will be made available on the Batach Holdings website for review by commenting authorities and I&As. All relevant authorities and registered I&As will be notified of the availability of the final reports for further comment for a period of 30 days. Comments received on final reports will be submitted directly to GDARD online portal for inclusion in the decision-making process.

11.4 Public Participation - Decision Notification

In accordance with section 4(2) of the EIA Regulations, all registered I&APs will be notified in writing within 14 days of the decision date and the appeal process. The Public Participation will feed back to the Technical Process as indicated in the table below. All the comments received from the public participation process will be incorporated into the technical document and the Environmental Impact report will be compiled by the technical team afterwards (see flow process 13.3.1 below).

11.4.1 PPP and Technical Flow Process

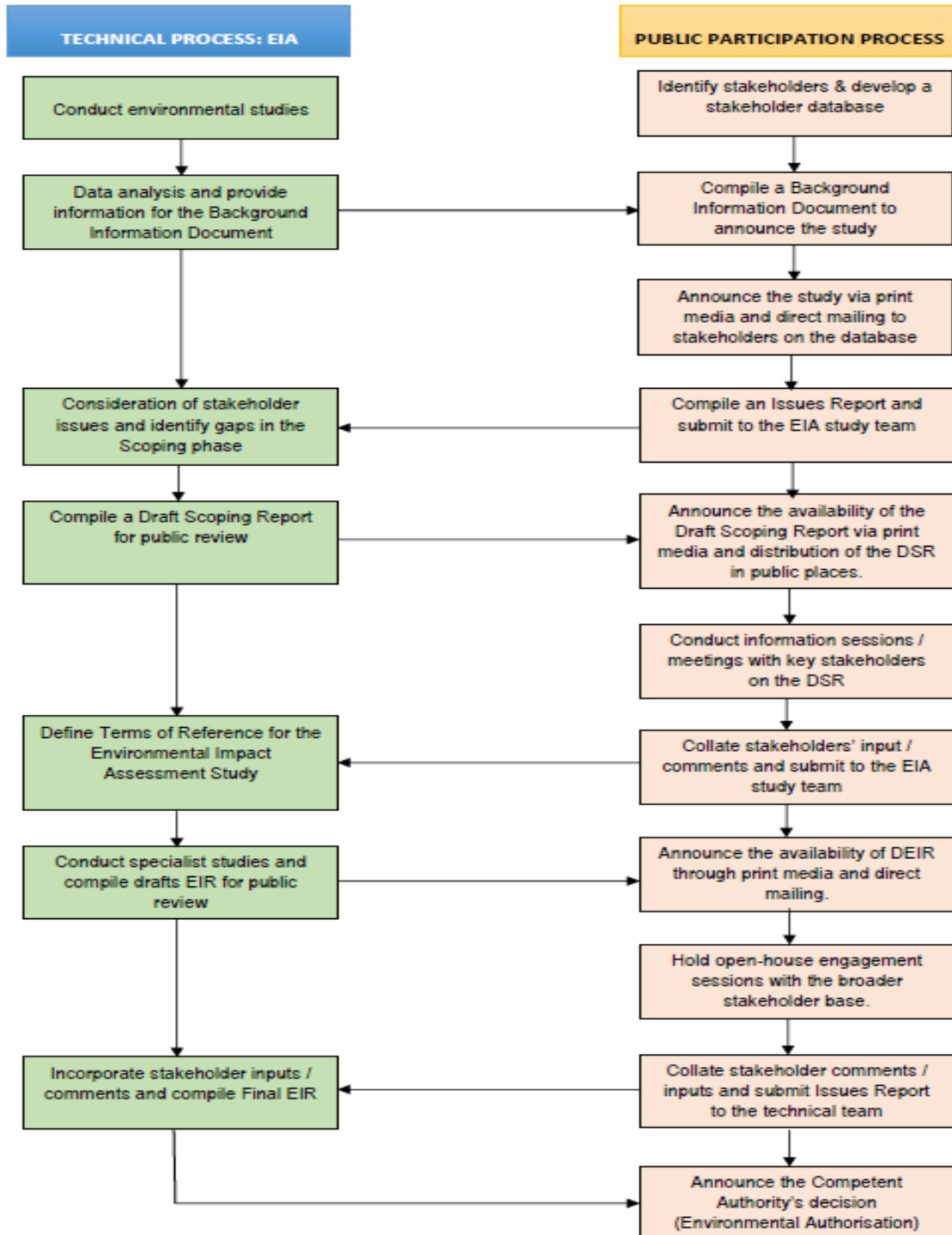


Table 13-1:- Requirements for Public Participation

Public Participation Requirements in terms of Chapter 6 of the Amended 2014 EIA Regulations (Regulations 39 - 44) (GN 326, 07 April 2017)		African Chemicals Caustic Soda - EIA Public Participation Process
1	If the proponent is not the owner or person in control of the land on which the activity is to be undertaken, the proponent must, before applying for an environmental authorisation in respect of such activity, obtain the written consent of the landowner or person in control of the land to undertake such activity on that land.	The project site is ERF 198 IR The current registered landowner is Chlorchem Properties. The Landowner Owner Consent Form will be signed
2	Sub regulation (1) does not apply in respect of- (a) linear activities; (b) activities constituting or activities directly related to prospecting or exploration of a mineral and petroleum resource or extraction and primary processing of a mineral or petroleum resource; and (c) strategic integrated projects as contemplated in the Infrastructure Development Act, 2014	
40. Purpose of public participation		
1	The public participation process to which the- (a) basic assessment report and EMPr, and where applicable the closure plan, submitted in terms of regulation 19; and (b) scoping report submitted in terms of regulation 21 and the environmental impact assessment report and EMPr submitted in terms of regulation 23; was subjected to must give all potential or registered interested and affected parties, including the competent authority, a period of at least 30 days to submit comments on each of the basic assessment report, EMPr, scoping report and environmental impact assessment report, and where applicable the closure plan, as well as the report contemplated in regulation 32, if such reports or plans are submitted at different times.	Potential I&APs and relevant authorities will be notified of the application and the availability of the BID / DSR for review and comment via a newspaper advert, posters and notification letters; and will be provided with a comment period of 30 days to register and submit comments on the BID/DSR. All registered I&APs and the relevant authorities will also be provided with a period of 30 days to submit comments on the Draft EIA Report (DEIR).

Public Participation Requirements in terms of Chapter 6 of the Amended 2014 EIA Regulations (Regulations 39 - 44) (GN 326, 07 April 2017)		African Chemicals Caustic Soda - EIA Public Participation Process
2	The public participation process contemplated in this regulation must provide access to all information that reasonably has or may have the potential to influence any decision with regard to an application unless access to that information is protected by law and must include consultation with- (a) the competent authority; (b) every State department that administers a law relating to a matter affecting the environment relevant to an application for an environmental authorisation; (c) all organs of state which have jurisdiction in respect of the activity to which the application relates; and (d) All potential, or, where relevant, registered interested and affected parties.	The following consultation will take place / is planned to occur: (a) Pre-application meeting with GDARD in October 2020. (b) Hard copies of the BID/ DSR sent to GDARD, DWS, City of Ekurhuleni Metro, Department of Transport and Department of Health. (c) Potential I&APs including adjacent neighbours, the ward councillor and local ratepayer and environmental organisations. Batach Environment team will endeavour to ensure that access is being provided to all information that Batach Holdings is aware of, that reasonability has or may have the potential to influence any decision with regard to this application.
3	Potential or registered interested and affected parties, including the competent authority, may be provided with an opportunity to comment on reports and plans contemplated in sub-regulation: - (1) Prior to submission of an application but must be provided with an opportunity to comment on such reports once an application has been submitted to the competent authority.	Potential I&APs and relevant authorities will be provided with an opportunity to comment on the DSR and the DEIR.
41. Public participation process		
1	This regulation only applies in instances where adherence to the provisions of this regulation is specifically required.	This regulation does specifically apply to the applications – refer to section 13 above)
2	The person conducting a public participation process must take into account any relevant guidelines applicable to public participation as contemplated in section 24] of the Act and must give notice to all potential interested and affected parties of an application or proposed application which is subjected to public participation by- (a) fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of-	The DEA (2012) IEM Guideline Series 7: Public Participation in the EIA Process will be taken into account during this process. (a) Notice will be given to potential I&APs of the application by fixing notice boards at key locations near the site. (b) Written notice will be provided to- (i) Chlorchem Properties.

Public Participation Requirements in terms of Chapter 6 of the Amended 2014 EIA Regulations (Regulations 39 - 44) (GN 326, 07 April 2017)	African Chemicals Caustic Soda - EIA Public Participation Process
<ul style="list-style-type: none"> (i) the site where the activity to which the application or proposed application relates is or is to be undertaken; and (ii) any alternative site; (b) giving written notice, in any of the manners provided for in section 470 of the Act, to- <ul style="list-style-type: none"> (i) the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken; (ii) owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken; (iii) the municipal councillor of the ward in which the site and alternative site is situated and any organisation of ratepayers that represent the community in the area; (iv) the municipality which has jurisdiction in the area (v) any organ of state having jurisdiction in respect of any aspect of the activity; and (vi) any other party as required by the competent authority; (c) placing an advertisement in- <ul style="list-style-type: none"> (i) one local newspaper; or (ii) any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in terms of these Regulations; (d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be 	<ul style="list-style-type: none"> (ii) Adjacent landowners and tenants (iii) The local ratepayers association and the relevant ward councillor. (iv) City of Ekurhuleni Metropolitan Municipality. (v) Organs of state: GDARD, DWS, Department of Transport, Department of Health, SAHRA. (vi) Other key parties: Local environmental organisations (c) An advertisement will be placed in the local newspaper. (d) The activity will not have an environmental impact that extends beyond the boundaries of the district municipality in which it will be undertaken. (e) Assistance will be provided if required for language barriers

Public Participation Requirements in terms of Chapter 6 of the Amended 2014 EIA Regulations (Regulations 39 - 44) (GN 326, 07 April 2017)	African Chemicals Caustic Soda - EIA Public Participation Process
<p>undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official Gazette referred to in paragraph (c)(ii);and (e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to-</p> <ul style="list-style-type: none"> (i) illiteracy; (ii) disability; or (iii) Any other disadvantage. 	
<p>3 A notice, notice board or advertisement referred to in sub-regulation (2) must-</p> <ul style="list-style-type: none"> (a) give details of the application or proposed application which is subjected to public participation; and (b) state- <ul style="list-style-type: none"> (i) whether basic assessment or S&EIR procedures are being applied to the application; (ii) the nature and location of the activity to which the application relates; (iii) where further information on the application or proposed application can be obtained; and (iv) The manner in which and the person to whom representations in respect of the Application or proposed application may be made. 	<p>The notices, notice boards and advertisement will:</p> <ul style="list-style-type: none"> (a) Provide a description of the applications, including the applicant and the nature and location of the activity. (b) State that S&EIR process is being applied to the application. (c) Provide contact details (names, postal addresses, phone, fax, email and website address) where further information on the applications can be obtained and representations in respect of the applications may be made
<p>4 A notice board referred to in sub-regulation (2) must-</p> <ul style="list-style-type: none"> (a) be of a size of at least 60cm by 42cm; and (b) Display the required information in lettering and in a format as may be determined by the competent authority. 	<p>The notice boards will be -</p> <ul style="list-style-type: none"> (a) A2-size and laminated. (b) Displayed the required information.
<p>5 Where public participation is conducted in terms of this regulation for an application or proposed application, sub-regulation (2)(a), (b), (c) and (d) need not be complied with again during the additional public participation process contemplated in regulations 19(1)(b) or 23(1)(b) or the public participation process contemplated in regulation 21(2)(d), on condition that-</p>	<p>Written notice will be given to registered I&APs when the revised final Scoping Report and EIA Report are available for download from Batach Holdings and African Chemicals website and digital copies will be available on request from Batach Environmental team</p>

Public Participation Requirements in terms of Chapter 6 of the Amended 2014 EIA Regulations (Regulations 39 - 44) (GN 326, 07 April 2017)	African Chemicals Caustic Soda - EIA Public Participation Process
<ul style="list-style-type: none"> (a) such process has been preceded by a public participation process which included compliance with sub-regulation (2)(a), (b), (c) and (d); and (b) written notice is given to registered interested and affected parties regarding where the- <ul style="list-style-type: none"> (i) revised basic assessment report or, EMPr or closure plan, as contemplated in regulation 19(1)(b); (ii) revised environmental impact assessment report or EMPr as contemplated in regulation 23(1)(b); or (iii) environmental impact assessment report and EMPr as contemplated in regulation 21(2)(d); <p>may be obtained, the manner in which and the person to whom representations on these reports or plans may be made and the date on which such representations are due.</p>	<p>The notice will include the contact details, the manner in which representations on the revised documents may be made and a period of 30 days will be provided for the submission of representations.</p>
<p>6 When complying with this regulation, the person conducting the public participation process must ensure that-</p> <ul style="list-style-type: none"> (a) information containing all relevant facts in respect of the application or proposed application is made available to potential interested and affected parties; and (b) Participation by potential or registered interested and affected parties is facilitated in such a manner that all potential or registered interested and affected parties are provided with a reasonable opportunity to comment on the application or proposed application. 	<p>Batach Holdings will strive to ensure all information which contains relevant facts in respect of the application and of which Batach is aware, will be made available to I&AP's and participation by I&APs is facilitated in such a manner that all potential I&APs are provided with a reasonable opportunity to comment on the application.</p>
<p>7 Where an environmental authorisation is required in terms of these Regulations and an authorisation, permit or licence is required in terms of a specific environmental management Act, the public participation process contemplated in this Chapter may be combined with any public participation processes prescribed in terms of a specific environmental management Act, on condition that all relevant authorities agree to such combination of processes.</p>	<p>The EIA process of public participation will be undertaken, all other application to the relevant authorities a parallel process for public participation process will be undertaken.</p>
<p>42. Register of interested and affected parties</p>	

Public Participation Requirements in terms of Chapter 6 of the Amended 2014 EIA Regulations (Regulations 39 - 44) (GN 326, 07 April 2017)		African Chemicals Caustic Soda - EIA Public Participation Process
1	A proponent or applicant must ensure the opening and maintenance of a register of interested and affected parties and submit such a register to the competent authority, which register must contain the names, contact details and addresses of- (a) all persons who, as a consequence of the public participation process conducted in respect of that application, have submitted written comments or attended meetings with the proponent, applicant or EAP; (b) all persons who have requested the proponent or applicant, in writing, for their names to be placed on the register; and (c) all organs of state which have jurisdiction in respect of the activity to which the application relates	A register of I&APs will be opened and will be maintained and updated. The I&AP Register will contain the names, contact details and email addresses of all relevant organs of state and all persons who requested to be registered or who submitted written comments or attended meetings in respect of the application.
43. Registered interested and affected parties entitled to comment on reports and plans		
1	A registered interested and affected party is entitled to comment, in writing, on all reports or plans submitted to such party during the public participation process contemplated in these Regulations and to bring to the attention of the proponent or applicant any issues which that party believes may be of significance to the consideration of the application, provided that the interested and affected party discloses any direct business, financial, personal or other interest which that party may have in the approval or refusal of the application.	All registered I&APs will be provided with an opportunity to comment on the DSR and Draft EIA Report and will be provided further opportunity to comment on the revised/ final documents. Potential I&APs will be requested to complete a Registration and Comment Form/sheet which requests disclosure of their interests in the applications in terms of Regulation 43(1). All comments received will be included in a Comments and Responses Table.
2	In order to give effect to section 240 of the Act, any State department that administers a law relating to a matter affecting the environment must be requested, subject to regulation 7(2), to comment within 30 days	All relevant state departments will be requested by the EAP to comment on the reports within 30 days.
44. Comments of interested and affected parties to be recorded in reports and plans		
1	The applicant must ensure that the comments of interested and affected parties are recorded in reports and plans and that such written comments, including responses to such comments and records of meetings, are attached to the reports and plans that are submitted to the competent authority in terms of these Regulations.	All comments of I&APs will be recorded in a Comments and Responses Table and written comments, including responses to such comments and records of meetings will be attached to the final report.
2	Where a person desires but is unable to access written comments as contemplated in sub-regulation (1) due to-	This will be undertaken if required.

Public Participation Requirements in terms of Chapter 6 of the Amended 2014 EIA Regulations (Regulations 39 - 44) (GN 326, 07 April 2017)		African Chemicals Caustic Soda - EIA Public Participation Process
	(a) a lack of skills to read or write; (b) disability; or (c) Any other disadvantage; reasonable alternative methods of recording comments must be provided for.	
45	Other Relevant Legislative requirements to be considered during Public PARTICIPATION	
I	The compliance to the Critical Infrastructure Act, 2019	Compliance with the CIA

12 Issues

This chapter will meet the requirements of Item 2.(1)(g)(iii) in Appendix 2 of GN 326, by providing a summary of the issues raised by interested and affected parties (I&APs) and an indication of the manner in which the issues will be incorporated, or the reasons for not including them. Potential issues that may be raised by I&APs during the public participation process are:

- Health and safety and Emergency Preparedness Plan– risks associated with the use, storage, production and transport of chemicals that are classified as hazardous substances or dangerous goods i.e. toxic and flammable gases and corrosive substances with potential health and safety effects in the event of an accidental release.
- Air quality – the release of atmospheric emissions.
- Water – potential surface and groundwater contamination.
- Waste Management – during construction and operation
- Socio-economic – the social and economic benefits associated with the project.
- Traffic – potential increase in traffic associated with the project.
- Visual – aesthetic impact on the visual landscape.
- Noise – potential increase in ambient noise associated with operation of the Caustic Soda plant.
- Biodiversity – potential loss of biodiversity in terms flora, fauna and wetlands if any.
- Heritage – potential loss of cultural heritage resources during construction.
- Soils – potential impacts to soils and change in land capability.
- Services – provision of the required services to the site.

This list of issues will be updated after distribution of the DSR and receipt of comments from I&AP's. The preliminary assessment and public participation undertaken and an indication of the manner in which the issues will be incorporated in the EIA Report or the reasons for not including them

13 Assessment Methodology

This chapter will meet the requirements of Item 2.(1)(g)(vi) in Appendix 2 of GN 326, by providing the methodology used in identifying and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives. The methodology to be utilised to assess and rank each of the potential environmental impacts and risks identified has been formulated to comply with the scope of assessment and content of EIA Reports as specified in Appendix 3 of the Amended 2014 EIA Regulations (refer to item 3(j) of Appendix 3 in Government Notice R326).

The required scope of assessment is provided below:

An environmental impact assessment report must contain the information that is necessary for the competent authority to consider and come to a decision on the application, and must include :-

- (j) an assessment of each identified potentially significant impact and risk, including –
 - (i) cumulative impacts;
 - (ii) the nature, significance and consequences of the impact and risk;
 - (iii) the extent and duration of the impact and risk;
 - (iv) the probability of the impact and risk occurring;
 - (v) the degree to which the impact and risk can be reversed;
 - (vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and
 - (vii) the degree to which the impact and risk can be avoided, managed or mitigated;

In line with the requirements outlined in the box above, each potentially significant impact /risk identified must be assessed in terms of the following:

The assessment will consider impacts arising from the proposed activities of the project both before and after the implementation of appropriate mitigation measures.

CRITERIA	DESCRIPTION			
EXTENT	National (4) The whole of South Africa	Regional (3) Provincial and parts of neighboring provinces	Local (2) Within a radius of 2 km of the construction site	Site (1) Within the construction site
DURATION	Permanent (4)	Long-term (3)	Medium-term (2)	Short-term (1) The impact will either

	Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient	The impact will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter. The only class of impact which will be non-transitory	The impact will last for the period of the construction phase, where after it will be entirely negated	disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase
INTENSITY/ MAGNITUDE	Very High (4) Natural, cultural and social functions and processes are altered to extent that they permanently cease	High (3) Natural, cultural and social functions and processes are altered to extent that they temporarily cease	Moderate (2) Affected environment is altered, but natural, cultural and social functions and processes continue albeit in a modified way	Low (1) Impact affects the environment in such a way that natural, cultural and social functions and processes are not affected
PROBABILITY OF OCCURRENCE	Definite (4) Impact will certainly occur	Highly Probable (3) Most likely that the impact will occur	Possible (2) The impact may occur	Improbable (1) Likelihood of the impact materialising is very low

Significance is determined through a synthesis of impact characteristics. Significance is also an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

13.1 CRITERIA USED FOR THE RATING OF IMPACTS

TABLE 13.1 : CRITERIA FOR THE RATING OF CLASSIFIED IMPACTS

Low impact (4 -6 points)	A low impact has no permanent impact of significance. Mitigation measures are feasible and are readily instituted as part of a standing design, construction or operating procedure.
Medium impact (7 -9 points)	Mitigation is possible with additional design and construction inputs.
High impact (10 -12 points)	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment.
Very high impact (13 - 20 points)	Permanent and important impacts. The design of the site may be affected. Intensive remediation is needed during construction and/or operational phases. Any activity which results in a “very high impact” is likely to be a fatal flaw
Status	Denotes the perceived effect of the impact on the affected area.
Positive (+)	Beneficial impact.
Negative (-)	Deleterious or adverse impact.
Neutral (/)	Impact is neither beneficial nor adverse.
It is important to note that the status of an impact is assigned based on the status quo – i.e. should the project not proceed. Therefore not all negative impacts are equally significant.	

The suitability and feasibility of all proposed mitigation measures is included in the assessment of significant impacts. This was achieved through the comparison of the significance of the impact before and after the proposed mitigation measure is implemented. Mitigation measures identified as necessary will be included in an EMPr.

13.2 STATUS OF IMPACT

The impacts are assessed as either having a negative effect (i.e. at a 'cost' to the environment) or positive effect (i.e. a 'benefit' to the environment), or Neutral effect on the environment.

Extent of the Impact

- (1) Site (site only),
- (2) Local (site boundary and immediate surroundings),
- (3) Regional (within the City of Ekurhuleni, Gauteng Province,
- (4) National, or

Duration of the Impact

The length that the impact will last for is described as either:

- (1) Short term (1-5 years),
- (2) Medium term (5-15 years),
- (3) Long term (ceases after the operational life span of the project),
- (4) Permanent.

INTENSITY / Magnitude of the Impact

The intensity or severity of the impacts is indicated as either:

- (1) Low,
- (2) Moderate (environmental functions altered but continue),
- (3) High (environmental functions temporarily cease), or
- (4) Very high / Unsure (environmental functions permanently cease).

Probability of Occurrence

The likelihood of the impact actually occurring is indicated as either:

- (1) Improbable (unlikely to occur),
- (2) Possible (probability very low due to design or experience)
- (3) Highly Probable (distinct probability that the impact will occur),
- (4) Definite. (most likely to occur), or

Significance of the Impact

Based on the information contained in the points above, the potential impacts are assigned a significance rating (S). This rating is formulated by adding the sum of the numbers assigned to extent (E), duration (D) and magnitude (M) and multiplying this sum by the probability (P) of the Occurrence.

$$S = (E+D+M) P$$

The significance ratings for this project are given below

(<6) low (i.e. where this impact would not have a direct influence on the decision to develop in the area),

(7-9) medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),

(10-12) high (i.e. where the impact must have an influence on the decision process to develop in the area).

(13-20) Very High Impact - Permanent and important impacts. The design of the site may be affected

13.3 Reversibility:

In order to assess the degree to which the potential impact can be managed and /or mitigated, each impact is to be assessed twice, as follows:

- Firstly, the potential impact is to be assessed and rated prior to implementing any mitigation and management measures.
- Secondly, the potential impact is to be assessed and rated after the proposed mitigation and management measures have been implemented.

The purpose of this dual rating of the impact is to enable comparison of the pre- and post- mitigation significance ratings and to calculate the percentage change, which indicates the degree to which the impact may be avoided, managed, mitigated and /or reversed.

13.4 Irreplaceable Loss:

In order to assess the degree to which the potential impact could cause irreplaceable Loss of Resources (LoR), one of the following classes (%) is to be selected based on the specialist's informed decision which will be conducted.

5	100% - permanent loss
4	75% - 99% - significant loss
3	50% - 74% - moderate loss
2	25% - 49% - minor loss
1	0% - 24% - limited loss

The Loss of Resources aspect should not affect the overall significance rating of the impact.

13.5 Cumulative Impacts:

Impacts cannot be assessed in isolation. An integrated approach to impact assessment requires that cumulative impacts be included in the assessment of individual impacts. Cumulative impacts must therefore be assessed de facto. A brief description of the cumulative nature of each impact will be provided for African Chemicals.

14 Preliminary Assessment

This chapter will meet the requirements of Item 2.(1)(g): (vii), (v), (viii), (ix) and (xi) in Appendix 2 of GN 326 relating to the potential impacts and risks which have informed the identification of the preferred alternatives.

An indication of the manner in which the potential issues identified in this Chapter will be incorporated into the EIA Report with specialist studies and recommendations captured

Table 14-1: Issues and Impacts

Potential Issues	Response
Noise	The project will be located in an industrial area and will be subject to noise monitoring in accordance with OHS Act Regulations. Based on information from similar facilities, the facility is not regarded as a noise nuisance in the context of its environmental setting, namely in an industrial area.
Heritage	A heritage impact specialist input report will be incorporated
Soils	Land capability and agricultural potential was assessed and was confirmed that the site is suitable for industrial development. A geotechnical assessment has been undertaken for the project.
Services	Most of the required services (water, electricity, sewer, storm water, roads) have already been supplied to site. Evaluation of the alternative options of disposal of the industrial liquid effluents (either from the bund or related infrastructure) will be undertaken as part of Feasibility Study and will inform the EIA Report.

14.1 Specialist Studies to be undertaken during the Assessment Phase

- Health and safety i.e. The Emergency Preparedness Plan and Health and safety risk assessment (MHI)
- Air Quality - Air quality impact assessment.

- Water - Surface and groundwater impact assessment.
- Socio-economic - Socio-economic impact assessment.
- Traffic - Traffic impact assessment.
- Visual - Visual impact assessment.

14.2 Preferred Alternatives

Alternatives	Preferred Option
Technology	none
Power supply	No Energy mix, but will be considered for study
Site location	Erf 198 IR
Layout	Alternative layouts have been identified for parking and further development
Effluent disposal	To be assessed during EIA
No-go	To be assessed in the EIA Report.

15 Plan of Study for EIA

In accordance with Item 2.(1)(g) in Appendix 2 of GN 326, this chapter provides a plan of study for the EIA process to be undertaken, including—

- (i) *A description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity.*

The following alternatives are to be assessed during the EIA:

- The preferred location alternatives
- Potential layout alternatives as recommended above and will be further modelled by specialists.
- The No-go option.
- Disposal of the industrial liquid effluent from the bund managed by the contracted services.

The following aspects will be assessed during the EIA:

- Health and safety risk (MHI) and Emergency Preparedness Plan
- Air quality – AQIA – the Air quality assessment will be conducted
- Water resources.
- Waste Management.
- Socio-economic Impact Assessment
- Traffic Impact
- Noise.
- Heritage.

- (ii) *Aspects to be assessed by specialists.*

The following aspects will be assessed by specialists:

- Health and safety risk (MHI) and Emergency Preparedness Plan (Pre and Post Construction)
- Air quality.
- Water resources.
- Waste Management
- Traffic Impact Assessment (TIA)

- (iii) *A description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists. Refer to **Chapter 14 above** for a description of the proposed assessment methodology.*

The proposed scope of work for the specialist studies is provided in this Plan of study.

15.1 Health and Safety Risk Assessment:

The health and safety risk assessment specialist MHI study will be undertaken by a specialist in conjunction with Dept. of Labour that will include the following:

- 1) Review of preliminary designs of proposed processing units, inventories, routing and transport conditions for all alternatives.
- 2) Development of accidental spill and fire scenarios for the facility. Incident scenarios and emission rates will be calculated such as oil, chlorine, hydrogen and hydrochloric acid for both individual and societal risk.
- 3) Using generic failure rate data (for tanks, pumps, valves, flanges, pipework, gantry, couplings and so forth), determination of the probability of each accident scenario.
- 4) For each incident developed in Step 3, determination of consequences (such as thermal radiation, domino effects, toxic-cloud formation and so forth).
- 5) For scenarios with off-site consequences (greater than 1% fatality off-site), calculation of maximum individual risk, taking into account all generic failure rates, initiating events (such as ignition), meteorological conditions and lethality.
- 6) Identification of any shortcomings and ranking of risks for possible risk reduction programmes.

15.2 Air Quality Impact Assessment:

The AQIA specialist study will be undertaken by Batach Holdings specialists and will include the following:

- 1) A detailed analysis of existing air quality monitoring data within the primary area
- 2) Indicate the topographical or meteorological conditions that may hinder the dispersal of air emissions.
- 3) Indicate the measures to be taken to control air emissions if any
- 4) Prepare meteorological data for inclusion in a suitable atmospheric dispersion model.
- 5) Prepare an emissions inventory, using calculated measurements, to include all potential emissions such as:
 - Chlorine (Cl₂).
 - Hydrogen chloride (HCl).
 - Hydrogen (H₂).
 - Particulate matter (PM).
 - Sulphur dioxide (SO₂).
- 6) Simulate dispersion of stack emissions and calculate ground level concentrations for various averaging periods, including hourly, daily and annual averages.
- 7) Prepare a comprehensive report to that will include the following:
 - A summary of all baseline monitoring data.
 - A list of assumptions and limitations.
 - Emissions inventory for the primary area if any
 - Model input parameter description.
 - Discussion of model results, with specific reference to the motivation for the AEL.
 - Provide recommendations for monitoring and management /mitigation plans.

15.3 Surface and Groundwater Impact Assessment:

The surface and groundwater impact assessment specialist study which will be undertaken by Batach Holdings specialists and will include the following:

- 1) Review of the existing geotechnical, geohydrological and hydrological information for the site
- 2) Describe the surface and groundwater regime for the proposed plant location.
- 3) Identify and assess potential impacts associated with the construction and operation of the proposed facility in terms of the quantity and quality of surface and groundwater resources, including potential increase in peak surface water flow and potential contamination from oil from heavy machinery.
- 4) Management and mitigation measures, including a Storm water Management Plan and a Water Quality Monitoring Plan for the site.
- 5) **Services report and storm water management** - The purpose of this study is to determine the impacts associated with the proposed development on the sewer and bulk water system and the required infrastructure needed to service the proposed development. The study will also focus on Storm water releases from the site.
- 6) The study will look at the extent of the development to determine the sewage flow as well as the water demand associated with this development. Existing water and sewer services, connection points and proposed upgrading will be investigated.

15.4 Waste Management Assessment:

A specialist for Waste Management to determine the waste and undertake the waste management assessment. The assumption that derived from the plant process design is that the waste streams that will be generated by African Chemicals are expected to be small in quantity. These streams will be disposed-off at commercial licensed facilities. The increased waste streams will be accommodated by such facilities if the proposed plant is in operation.

The specialist will undertake amongst other things the following

- 1) **WASTE HANDLING AND TRANSPORTATION**
 - 1.1 On-site facilities
 - 1.2 Off-site facilities
- 2) **ANTICIPATED WASTE STREAMS FOR THE PROPOSED Plant**

- 3) WASTE MANAGEMENT PRACTICES
 - 3.1 Solid waste management
 - 3.2 Liquid waste management
 - 3.3 Waste-water management
 - 3.4 WASTE MINIMISATION AND PREVENTION STRATEGIES
- 4) REGULATORY AUTHORISATIONS –
- 5) Waste Management Plan Report

- 1) Recommend practicable mitigation measures to avoid and/ or minimise/ reduce impacts and enhance benefits.
- 2) Register the I&AP's and develop and register
- 3) Address, as required, further social issues raised by stakeholders during the stakeholder engagement (I&AP's) process
- 7)

15.5 Socio-economic Impact Assessment:

The socio-economic impact assessment specialist study will be undertaken by a specialist in Socio-economist and will include the following:

- 4) Define the socio-economic impact study area:
 - Describe the development site.
 - Research factors impacting on the economy of the surrounding area and primary beneficiaries.
- 5) Describe the socio-economic characteristics of the impact area:
 - Profile the demographic and economic characteristics of the area.
 - Review planning and Local Economic Development Frameworks, including spatial Development (LSDF) and economic development plans, as well as planned and proposed development projects.
- 6) Identify and assess the potential significant social and economic impacts associated with the project.
- 7) Recommend practicable mitigation measures to avoid and/ or minimise/ reduce impacts and enhance benefits.
- 8) Register the I&AP's and develop and register
- 9) Address, as required, further social issues raised by stakeholders during the stakeholder engagement (I&AP's) process and Social Impact study

1.3 Traffic Impact Assessment:

The site traffic impact assessment specialist study which is already undertaken by Oarona Consulting Engineers and will include the following:

- 1) Review available literature including the traffic impact assessment, site visit and identification of data requirements, including the commissioning of a traffic count at the access intersection, observing public transport, road safety and pedestrian flows along the road or roads passing the proposed access intersection (these will be visual assessments).
- 2) Liaise with the project team, local officials and the relevant road authorities if required.
- 3) Identify any existing road infrastructure, road safety or public transport related issues on the road or roads from which access will be taken for this development.
- 4) Assess the traffic likely to be generated by the proposed development during construction and during full operations and analyse the access intersection to establish the geometric layout required based on forecast traffic flows in accordance with the manual.
- 5) Assess whether any site-specific pedestrian, public transport or road safety interventions are required for this development for both construction and full operations.
- 6) Assess the road condition at the access to identify whether any rehabilitation is required by the municipality.
- 7) Liaise with the municipal and road authority officials if need required.
- 8) Prepare a report including layout drawings in the required format.
- 9) Assess the road condition at the access to identify whether any rehabilitation is required by the municipality.
- 10) Liaise with the municipal and road authority officials if need required.
- 11) Prepare a report including layout drawings in the required format.

I.4 Visual Impact Assessment:

The visual impact assessment will not be undertaken as African Chemicals is a tenant of the site of the landowner that is already having similar industrial activity

- 8) The Base data already covers the view shed of the area.
 - 9) Visual baseline assessment:
 - The visual character of the area and sense of place.
 - The visual exposure of the area to the development.
 - The distance of visual receptors from the development.
 - The visual absorption capacity of the landscape to reduce visual intrusion from the development.
 - The landscape's compatibility with the development.
 - The sensitivity of potential visual receptors.
- (iv) *An indication of the stages at which the competent authority will be consulted.*

The stages at which GDARD will be consulted are:

- Pre-application meeting – October 2020
 - Application stage
 - Consultation during the comment period on the Draft Scoping Report.
 - Consultation during the comment period on the Draft EIA Report.
- (v) *Particulars of the public participation process that will be conducted during the environmental impact assessment process will be communicated to all the stakeholders.*
- (vi) *A description of the tasks that will be undertaken as part of the environmental impact assessment process.*

The following preliminary tasks have been undertaken as part of the **Technical EIA process as well as Public Participation** studies:

- Health and safety risk assessment (MHI)
- Air quality impact assessment.
- Surface and groundwater impact assessment.

- Socio-economic impact assessment.
 - Traffic impact assessment.
 - Visual impact assessment
 - Prepare the Draft EIA Report and Draft EIR.
 - Notify registered I&APs of the availability of the Draft EIA Report and Draft S&EIR for review and comment.
 - Undertake consultation with I&APs as required.
 - Prepare a Comments and Responses Table for inclusion in the Final EIA Report.
 - Finalise the EIA Report and S&EIR based on the comments received.
 - Submit the Final EIA Report and S&EIR to GDARD for a decision on the application.
 - Notify registered I&APs of the availability of the final report for review and comment.
 - Notify I&APs of GDARD for decision and the appeal process.
- (vii) *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.*
- Suitable management and mitigation measures will be identified during the EIA and included in the EMPr

16 EAP Affirmation

In accordance with Items 2.(1)(i) and 2.(1)(j) in Appendix 2 of GN 326, this chapter provides an undertaking under oath or affirmation by the EAP in relation to —

- (i) The correctness of the information provided in the report.
- (ii) The inclusion of comments and inputs from stakeholders and interested and affected parties.
- (iii) Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties.
- (iv) The level of agreement between the EAP and interested and affected parties on the plan of study for undertaking the environmental impact assessment.
- (v) Independence of the EAP

17 Other Requirements

In accordance with Items 2.(1)(k) and 2.(1)(l) and Item 2.(2) in Appendix 2 of GN 326, this chapter provides:

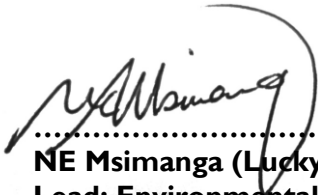
- (i) Where applicable, any specific information required by the competent authority.
- (ii) Any other matter required in terms of section 24(4)(a) and (b) of the Act.
- (iii) Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a scoping report, the requirements as indicated in such notice will apply.

18 Conclusions and Recommendations

Based on the investigations undertaken during review and preparation of this Draft Scoping Report document, Batach Holdings is of the opinion that the proposed activity is not in conflict with any regulation as contemplated by NEMA and other legislations. Furthermore, this DSR document complies substantially with Appendix 2 of Government Notice 362 (07 April 2017) and all identified applicable protocols and minimum information requirements and the applicant is willing and able to ensure compliance with these requirements within the prescribed timeframe. Batach Holdings (Pty) Ltd therefore recommends that this **DSR document and Plan of Study** (Chapter 15) be accepted, with or without conditions, and that the applicant be allowed to continue with the tasks contemplated in the Plan of Study.

Prepared by

Batach Holdings (Pty) Ltd



NE Msimanga (Lucky)
Lead: Environmental Assessment Practitioner

Reviewed by:

Dr. Thomas Gyedu Ababio
(Aquatic Ecotoxicology)

All data used as source material plus the text, tables, figures, and attachments of this document have been reviewed and prepared in accordance with generally accepted professional engineering and environmental practices.