PROPOSED ANHYDROUS HYDROGEN FLOURIDE PLANT AND ALUMINIUM TRI-FLOURIDE PLANT

Scoping and Environmental Impact Assessment: Project Introduction

UNITED BY OUR DIFFERENCE

WSP

Introduction

- WSP Environment and Energy appointed as independent Environmental Assessment Practitioner

- Objectives:
  - Introduce the project to the Environmental Review Committee (ERC)
  - Present the key potential environmental issues

- Anticipated meeting outcomes:
  - Provide the ERC with:
    - An understanding of project drivers
    - Environmental aspects and plan of study
    - Project timeframes
  - To provide WSP with preliminary stakeholder/ authority project concerns

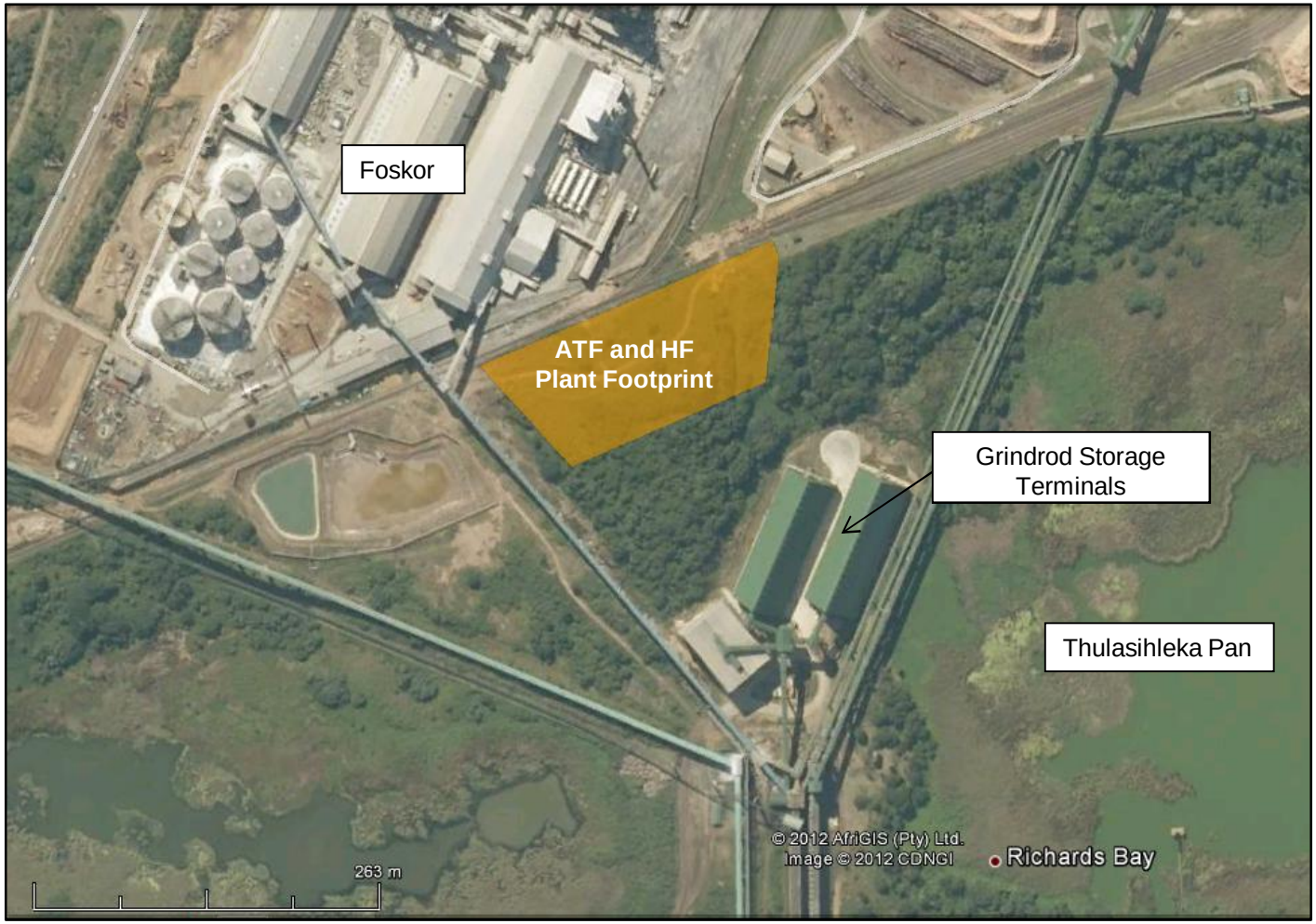
Project Overview

- Foskor is currently involved in diversification projects aimed to optimise the use of intermediate products (namely fluosilicic acid) and reduce pollutant outputs

- Fluoride currently recovered from the phosphoric acid plant as fluosilicic acid. Spent/ excess fluosilicic acid is diluted into the Mhlathuze sea outfall pipeline

- Construction of a plant for the production of Anhydrous Hydrogen Fluoride (AHF) and Aluminium Tri-fluoride (ATF)
  - AHF: Fluosilicic acid to be recovered and used as a raw material for AHF production *(Used in production of fluorocarbons, petroleum alkylation, metal pickling etc.)*
  - ATF: Produced as a secondary product by reaction of aluminium hydroxide with anhydrous hydrofluoric acid *(Used as a fluxing agent in aluminium smelters)*

Project Location



Legislative Framework

- National Environmental Management Act (NEMA)

Project Aspect	Trigger
Wetland located within project footprint	GN. R544 (11) – Construction within 32m of a watercourse GN. R544 (18) – Excavation of material of more than 5 cubic metres from a water course (including wetland)
Project footprint located within undeveloped land zoned as Conservation Amenity	GN. R544 (23) – Transformation of undeveloped land greater than 1 Ha in size to industrial land GN. R544 (24) – Transformation of land zoned as open space, conservation or equivalent, bigger than 1000 square metres in size, to industrial use
Amendment of Foskor's APPA registration certificate in terms of Section 21 of the NEM: AQA (Primary production of acids)	GN. R544 (28) – Amendment of permit/ license
The storage of sulphuric acid in excess of 500 cubic metres	GN. R545 (3) - Sulphuric Acid, which is listed in terms of SANS 10234, will be produced and stored within the proposed ATF/ AHF plant. The anticipated quantity will be 3500m^3; consequently above the stipulated threshold volume of 500m3 Anhydrous Hydrogen Fluoride will be produced and stored within the proposed plant. The anticipated volume of the storage tanks on site will be 50m^3 each with a total volume of 150m^3. While not listed within SANS 10234, Anhydrous Hydrogen Fluoride was listed within SANS 10228 and has been included as it is a well-documented hazardous substance.

- Scoping and EIA Application for Environmental Authorisation submitted to the Department of Environmental Affairs

Scope of Work

- Scoping Phase

<u>Key Scoping Phase Outcomes:</u>

- Technical project description
- Review of Best Available Technology (*viz.* European Integrated Pollution Prevention and Control Bureau)
- Description of receiving environment
- Identification of environmental issues and potential impacts
- Plan of study for Environmental Impact Assessment Phase including specialist input

Draft Scoping Report due for release end May/ early June 2012

Scope of Work (continued…)

- Environmental Impact Assessment Phase

<u>Key environmental issues requiring specialist input:</u>

1. Airborne Emissions

a. Production of AHF:

- Fluoride recovery to be improved for production of fluosilicic acid as a raw material
- Potential increase in tail-gases from secondary reactions

b. Aluminium hydroxide (raw material for ATF production)

- Potential increase in PM and gaseous products from drying process (*viz.* carbon monoxide and oxides of nitrogen)

<u>EIA Plan of Study – AQIA</u> *(Airshed Planning Professionals (Pty) Ltd)*

- Risk characterisation of relevant pollutants
- Quantitative emissions inventory
- Atmospheric dispersion model (prediction of key pollutant concentrations – fluorides and PM)
- Report detailing assessment methodology, findings and recommendations

Scope of Work (continued…)

2. Hazardous Substances

a. Production and storage of hydrofluoric acid

- Potential release from accidental spills and vapour clouds
  - Hydrofluoric acid/ hydrogen fluoride is normally a colourless gas due to low a low boiling point of ~20^{o}C
  - Toxic with potentially severe acute and long term impacts dependent on exposure

<u>EIA Plan of Study – Quantitative Risk Assessment</u> (Riscom)

- Identify project components that are flammable, toxic, reactive or corrosive that have the potential to result in a major incident (fires, explosions or toxic release)
- Develop accidental loss of containment scenarios for equipment containing hazardous materials
- Determine consequence for loss of containment scenarios
- Determine societal risk posed by the facility
- Statement either supporting or not supporting the project

Compliance with Occupational Health and Safety Act and Major Hazard Installations Regulation would be required prior to construction – <u>this is beyond the scope of the EIA and would be conducted as a separate process</u>

Scope of Work (continued…)

3. Effluent Emissions

a. Silica oxide slurry effluent stream (production of AHF)

b. Other process effluent stream resulting from AHF/ ATF process

- Foskor currently disposes wastewater and gypsum slurry via sea outfall pipelines as per Mhlathuze Water and DWA parameters

- Potential change to effluent characteristics with implications to the sea outfall pipeline discharge limits

EIA Plan of Study

- Effluent chemical analysis: review of current effluent streams and assessment of potential loading on regulated contaminants and marine outfall discharge criteria

- Marine toxicology assessment: determination of silica oxide slurry / B-Line sea outfall effluent dilution required for non-toxic discharge to marine environment

Way Forward

Release of Draft Scoping Report for stakeholder comment

(Stakeholder feedback and project input)

Submission of Final Scoping Report

Authority acknowledgement and acceptance of EIA plan of study

Draft Environmental Impact Assessment (including specialist input) for stakeholder comment (Q3 2012)

(Stakeholder feedback and project input)

Submission of Final Environmental Impact Assessment Report to DEA (Q4 2012)