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## DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

EIA REF: 14/12/16/3/3/2/2132

**Arm Scor EIA Application in support to the Atmospheric Emissions License (AEL) Application for the operation of Arm Scor Dockyard Foundry in Simon's Town, City of Cape Town Metropolitan, Western Cape.**

**22 JULY 2022**

**Prepared by:**

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**Prepared for:**

**ARMSCOR (SOC) Ltd.**



**ARMSCOR**  
Armaments Corporation of South Africa SOC Ltd

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## LIST OF ACRONYMS

ADF	Armcor Dockyard Foundry
BAT	Best Available Technology
CA	Competent Authority
CBA	Critical Biodiversity Area
CFP	Chance Finds Procedure
CTM	Cape Town Metropolitan
DEIR	Draft Environmental Impact Assessment Report
DFFE	Department of Forestry, Fisheries and Environment
DOT	Department of Transport
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme
ERA	Environmental Risk Assessment
ESA	Ecological Support Area
FEPA	Freshwater Ecosystem Priority Areas
GA	General Authorisation
GHG	Greenhouse Gas
HCW	Health care (medical) waste
HGM	Hydrogeomorphic
I&APs	Interested and Affected Parties
MCAs	Mountain Catchment Areas
m <sup>3</sup> /h	cubic metres per hour
m <sup>2</sup> /s	square metres per second
MPA	Marine Protected Area
MSDS	Material Safety Data Sheet
µg/m <sup>3</sup>	Micrograms per cubic meter
NAAQA	National Ambient Air Quality Standards
NEMA	National Environmental Management Act 107 (Act 107 of 1998)
NEM:PAA	National Environmental Management: Protected Areas, 2003 (Act 57 of 2003)
NFEPA	National Freshwater Ecosystem Priority Areas

NWBEST	National Web-Based Environmental Screening Tool
PAOI	Project Area of Influence
ppb	Parts per billion
PM	Particulate Matter
SCADA	Supervisory Control and Data Acquisition
SCC	Species of Conservation Concern
SP	Significance Point/score

## **GLOSSARY OF TERMS**

**ACTIVITY:** An action either planned or existing that may result in environmental impacts through resource use. For the purpose of this report, the terms 'activity' and 'development' are freely interchanged.

**ALTERNATIVES:** Different means of meeting the general purpose and requirements of the activity, which may include site or location alternatives; alternatives to the type of activity being undertaken; the design or layout of the activity; the technology to be used in the activity and the operational aspects of the activity.

**APPLICANT:** The project proponent or developer responsible for submitting an environmental application to the relevant environmental authority for environmental authorisation.

**ARCHAEOLOGICAL RESOURCES:** includes (a) material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artifacts, human and hominid remains and artificial features and structures; (b) rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation; wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, 1994 (Act 15 of 1994), and any cargo, debris or artifacts found or associated therewith, which is older than 60 years or which SAHRA considers to be worthy of conservation; features, structures and artifacts associated with military history which are older than 75 years and the site on which they are found.

**BIODIVERSITY:** The variety of life in an area, including the number of different species, the genetic wealth within each species, and the natural areas where they are found.

**CONTRACTOR:** companies and or individual persons appointed on behalf of the client to undertake activities, as well as their sub-contractors and suppliers.

**DEVELOPMENT:** the building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity, but excludes any modification, alteration or expansion of such a facility, structure or infrastructure and excluding the reconstruction of the same facility in the same location, with the same capacity and footprint.

**DEVELOPMENT FOOTPRINT:** any evidence of physical alteration because of the undertaking of an activity.

**ENVIRONMENT:** in terms of the NEMA (as amended), the “environment” means the surroundings within which humans exist and that are made up of: (i) the land, water, and atmosphere of the earth; (ii) micro-organisms, plant and animal life; any part or combination of (i) of (ii) and the interrelationships among and between them; the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

**ENVIRONMENTAL AUTHORISATION:** An authorisation issued by the competent authority in respect of a listed activity, or an activity which takes place within a sensitive environment.

**ENVIRONMENTAL CONTROL OFFICER (ECO):** an individual nominated through the client to be present on-site to act on behalf of the client in matters concerning the implementation and day to day monitoring of the EMPr and conditions stipulated by the authorities as prescribed in NEMA.

**ENVIRONMENTAL IMPACT:** the change to the environment, whether adverse or beneficial, wholly or partially resulting from an organization’s activities, products or services.

**ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr):** a detailed plan of action prepared to ensure that recommendations for enhancing or ensuring positive environmental impacts and limiting or preventing negative environmental impacts are implemented during the lifecycle of the project. This EMPr focuses on the construction phase, operation (maintenance) phase and decommissioning phase of the proposed project.

**GENERAL WASTE:** waste that does not pose an immediate hazard or threat to health or the environment, and includes domestic waste; building and demolition waste; business waste; and inert waste.

**HAZARDOUS WASTE:** hazardous waste means any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment.

**HYDROLOGICAL SYSTEM:** water bodies and their connectivity to the welfare of an ecosystem.

**INDIGENOUS VEGETATION:** refers to vegetation consisting of native plant species occurring naturally in an area, regardless of the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years.

**INTERESTED AND AFFECTED PARTY (I&AP):** for the purposes of Chapter 5 of the NEMA and in relation to the assessment of the environmental impact of a listed activity or related activity, an interested and affected party contemplated in Section 24(4) (a) (v), and which includes (a) any person, group of persons or organization interested in or affected by such operation or activity; and (b) any organ of state that may have jurisdiction over any aspect of the operation or activity.

**MITIGATION:** the measures designed to avoid, reduce or remedy adverse impacts.

**POLLUTION:** NEMA defines pollution to mean any change in the environment caused by the substances; radioactive or other waves; or noise, odours, dust or heat emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people or will have such an effect in the future.

**REHABILITATION:** rehabilitation is defined as the return of a disturbed area to a state which approximates the state (wherever possible) which it was before the disruption.

**WATER POLLUTION:** the National Water Act, 1998 (Act 36 of 1998) defines water pollution to be the direct or indirect alteration of the physical, chemical or biological properties of a water resource so as to make it less fit for any beneficial purpose for which it may reasonably be expected to be used; or harmful or potentially harmful (a) to the welfare, health or safety of human beings; (b) to any aquatic or non-aquatic organisms; (c) to the resource quality, or (d) to property.

**WATERCOURSE:** can be a) a river or spring; b) a natural channel or depression in which water flows regularly or intermittently; c) a wetland, lake or dam into which, or from which, water flows; and/or d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water Act, 1998 (Act No. 36 of 1998) and a reference to a watercourse includes, where relevant, its bed and banks.

**WETLAND:** the land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

## **ASSUMPTIONS AND LIMITATIONS**

Certain assumptions, limitations, and uncertainties are associated with this report. This report is based on information that is currently available and, as a result, the following assumptions and limitations should be noted:

- ✚ This report is based on project information provided by the client;
- ✚ The description of the baseline environment has been obtained from environmental desktop study, site/field visits and specialist studies;
- ✚ The results are based on the outcomes of a single assessment. The risk assessment only included the proposed development and the anticipated activities, no ancillary activities were considered; and
- ✚ In determining the significance of impacts, with mitigation, it is assumed that mitigation measures proposed in the report are correctly and effectively implemented and managed throughout the life of the project.



## EXECUTIVE SUMMARY

Armscor (SOC) Ltd in Simon's Town requires an Atmospheric Emission License (AEL) with regard to the operations of the Armscor Dockyard foundry (ADF) at the end of Cole Point Road, Simon's Town, Western Cape. In terms of the legal environmental requirement, Armscor will apply for the Section 22 (A) rectification for an AEL application for the foundry, as provided by the National Environmental Management: Air Quality Act 39 of 2004 (AQA). Consequently, the Environmental Impact Assessment (Scoping and EIR) process has commenced, in support of the application for the AEL for the operation of the ADF

Some of the key environmental issues associated with the operations of a foundry include air emissions, solid waste, wastewater and noise. All these issues will be explored in detail during the course of this EIA for the ADF and documented accordingly in the EIR.

Atmospheric Emissions licenses (AELs) are obligatory under the National Environmental Management: Air Quality Act 39 of 2004 (AQA) for activities that result in atmospheric emissions which have a significant negative environmental impact, as listed in GN 893 of November 22, 2013, and amended in 2015. The following NEM:AQA Section 21 listed activity is triggered: Category 4: Metallurgical Industry- (10) Subcategory 4.10: Foundries; Production and or casting of iron, iron ores, steel or ferroalloys, including the cleaning of castings and handling of casting mould materials. Emissions from the ADF comprise of aluminum, copper, lead and zinc base alloy metal castings production emissions. The most significant ducted source emissions is the furnaces from metal melting, which consist of PM, SO<sub>2</sub> and NO<sub>x</sub> (NO<sub>2</sub>) primarily. In addition, furnaces may be sources of Lead, Cadmium or Sulphur Oxides (SO<sub>x</sub>) emissions, depending on the type of fuel used to fire the furnace. As a result, the Armscor facility is required to apply for Section 22(A) of National Environmental Management: Air Quality Act [NEM: AQA (Act No.39 of 2004)] rectification for AEL application for the foundry with National Department of Forestry, Fisheries and Environmental (Air Quality Authorisation Directorate).

Emvelo Quality and Environmental Consultant (PTY) Ltd has been appointed by Armscor (SOC) Ltd (the Applicant), as the independent Environmental Assessment Practitioner (EAP), to facilitate the Scoping and Environmental Impact Assessment Process in support of the AEL application as required in terms of the National Environmental Management Act ,1998 (Act. No. 107 of 1998) (NEMA) for this application.

The NEMA Environmental Impact Assessment (EIA) Regulations (2014) as amended in 2017, govern the process of applying for environmental authorization for certain developments. A provision in the EIA Regulations is made for two forms of assessment: Basic Assessment and Scoping & EIA, depending on the scope of the activity. The EIA regulations specify that: Activities identified in Listing Notice 1 and 3 (GNR 327 and 324 of 2017) require a Basic Assessment while activities identified in Listing Notice 2 (GNR 325 of 2017) are subject to a Scoping and EIA. The listed activity associated with the proposed development is classified under Listing Notice 2, Activity 6. Therefore, this application will follow a **full Scoping and EIA process**.

The Public Participation Process (PPP) for both the Scoping and Environmental Impact Assessment was undertaken in accordance with chapter 6 of GN No. 326 (7 April 2017), as well as the EIA regulations and the Disaster Management Act, 2002 (Act No. 57 of 2002) as published on 29 April 2020 (**Refer to Appendix E**).

The ADF is operational, and no upgrades have been described for this EIA Application. Therefore, the impact assessment is on the basis of operation and maintenance of the foundry. The summary of the significant impacts for the operation/maintenance phase are outlined by (**Table 1**) below.

The preferred 'Alternative A: *Demand Alternative*', indicates that the ADF will cause minimal ambient air pollution as the casting will be carried out on an *ad hoc* basis, this will be consolidated with the '*Scheduling Alternative*'. 'Alternative B: *Scheduling Alternative*', indicates that the ADF will only result in ambient air pollution within staggering fixed periods, unlike the continuous day to day emissions, as the casting orders will be consolidated and be undertaken as a batch process. This option also takes into consideration other aspects such as the prevailing wind direction and wind speed. The 'Alternative C: *Technology Alternative*', indicates that the ADF as two independent extraction systems, one for the copper and aluminium furnaces, and one for the zinc furnaces. Each diesel-fired furnace is fitted with an extraction hood that is linked to the ducting, filtration and shut-off valves and a centrifugal fan of 17000m<sup>3</sup>/h. Therefore, these alternatives cannot be evaluated in isolation as they are interlinked to one another.

In order to ensure that the potential identified alternatives are assessed in the most objective manner possible, an environmental sensitivity exercise, and preliminary desktop studies were undertaken for the study area, against the foundry's operation. A screening study was also initiated in order to assess where identified potential alternatives would be suitable. Therefore, the direct and indirect impacts, as a result of operations, include biophysical impacts and socio-

economic impacts, because the foundry metal casting process releases the flue gases of chemical compounds such as cadmium, lead, sulphur dioxide (depending on the furnace input) into the atmosphere via stacks. As a result, the terrestrial biodiversity (flora & fauna) sensitivity was considered to be very high. The potential impact is observed to be ambient and atmospheric pollution.

The key environmental issues that were identified during the scoping phase are: impacts on terrestrial biodiversity (fauna), atmospheric emission, ambient air pollution, and impact as a result of waste emanating from foundry's operation.

**Table 1: Summarised Impacts Significance**

Impact	ADF Operation		ADF Equipment Decommissioning	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Atmospheric emission resulting from uncontrolled fine stack emitted Particulate Matter (PM), as regulated under Section 21 of the Air Quality Act Category 4, Sub-Category 4.10: Foundries	Medium-High	Very-Low	Negligible	Negligible
Uncontrolled atmospheric emission of flue gases from the five furnaces may lead to high concentrations of PM discharged into the atmosphere and ambient air.	Medium-High	Very-Low	Negligible	Negligible
Uncontrolled foundry operation will result in ambient air pollution from pollutant dispersion	Medium-High	Negligible	Negligible	Negligible
Ambient Air Pollution as a result of dust	Medium-High	Negligible	Medium	Negligible
Pollution as a result of waste emanating from operation activities	High	Negligible	High	Negligible
Disturbance of terrestrial species habitat	Medium	Negligible	Negligible	Negligible
Disturbance to surrounding wildlife	Medium	Very-Low	Negligible	Negligible
Social distress a result of uncontrolled ambient air pollution	Medium	Negligible	Negligible	Negligible
Impact on Human Health as a result of uncontrolled Ambient Air Pollution	Medium-High	Low	Medium	Negligible

The EAP submits that the environmental process undertaken thus far complies with the requirements as prescribed by Appendix 3 of GNR 326 (EIA Regulation 2014 as amended on 07 April 2017) and that this report covers the full suite of potential environmental issues related to the activities of operations of the ADF. All potential impacts have been evaluated and responded to

by either complete avoidance where possible, or by recommendation of the most appropriate and feasible mitigation measures. The preferred/mitigated development proposal presented in this Draft Environmental Impact Report (DIER) is responsive to the integrated results of inputs from I&APs during the Scoping Phase and the assessment of potential impacts made by the various specialists on the project team.

## 1 INTRODUCTION AND BACKGROUND

Armcor (SOC) Ltd in Simon's Town intends to apply for an Atmospheric Emission License (AEL) with regard to the operations of the Armcor Dockyard foundry (ADF) at the end of Cole Point Road, Simon's Town, Cape Town Metropolitan (CTM), Western Cape. In terms of the legal environmental requirement, Armcor will apply for the Section 22 (A) rectification for an AEL application for the foundry. Consequently, the Environmental Impact Assessment (Scoping and EIR) process has commenced, in support of the application for the AEL for the operation of the ADF. Atmospheric Emissions licenses (AELs) are obligatory under the National Environmental Management: Air Quality Act 39 of 2004 (AQA) for activities that result in atmospheric emissions which have a significant negative environmental impact, as listed in GN 893 of November 22, 2013, and amended in 2015. The following NEM:AQA Section 21 listed activity is triggered: Category 4: Metallurgical Industry- (10) Subcategory 4.10: Foundries; Production and or casting of iron, iron ores, steel or ferroalloys, including the cleaning of castings and handling of casting mould materials. Emissions from the ADF comprise of aluminium, copper, lead and zinc base alloy metal castings production emissions. The most significant ducted source emissions is the furnaces from metal melting, which consist of particulate matter (PM), SO<sub>2</sub> and NO<sub>x</sub> (NO<sub>2</sub>) primarily. In addition, furnaces may be sources of lead, cadmium or sulphur oxide (SO<sub>x</sub>) emissions, depending on the type of fuel used to fire the furnace. As a result, the Armcor facility intend to apply for Section 22(A) of National Environmental Management: Air Quality Act [NEM: AQA (Act No.39 of 2004)] rectification for AEL application for the foundry with National Department of Forestry, Fisheries and Environmental (Air Quality Authorisation Directorate).

An AEL can be obtained through two possible routes, namely, the AEL process that runs parallel with the Environmental Impact Assessment (EIA) process (combined process); or the AEL process applied for separately from the EIA process. For this application, the AEL process runs parallel with the EIA process representing a combined process.

Emvelo Quality and Environmental Consultant (PTY) Ltd has been appointed by Armcor (SOC) Ltd (the Applicant), as the independent Environmental Assessment Practitioner (EAP), to facilitate the Scoping and EIA Process in support of the AEL application as required in terms of the National Environmental Management Act ,1998 (Act. No. 107 of 1998) (NEMA) for this application.

## 1.1 Details of the EAP

The contact details of the Envlo Quality and Environmental Consultant (Pty) Ltd. (the EAP) is detailed on the cover page with project details. Herewith, below the details of the project team conducted the EIA. The CVs are attached as (**Appendix F**).

**Table 2: Project Team**

Name	Qualification	Professional Registration	Experience (Years)	Duties
Phumzile Lembede	B.Sc. Honours in Environmental Management.	Pr. Sci. Nat. (Environmental Science)  EAP (EAPASA)	10	Principal EAP (Project Manager & Environmental Scientist)
Dumisani Myeni	B.Sc. Honours in Environmental Management.	Cand. Sci. Nat. (Environmental Science)	8	Study Lead Environmental Scientist

## 1.2 Specialists

The (**Table 3**) provides a list of the specialist studies that have been undertaken to address the key impacts that was relevant to this EIA. The specialist reports are included in (**Appendix G**).

**Table 3: Team of Specialist**

Name	Qualification	Professional Registration	Experience (Years)	Duties
Andrew Husted	MSc Aquatic Health. BSc Natural Science	Pr. Sci. Nat. (Aquatic, Ecological and Environmental)	13 years	Terrestrial Biodiversity Impact Assessment

Bryan Paul	B.Sc. Honours	Science), SACNASP Pr.Sci.Nat. (SACNASP) (119552) – Ecological Science	6 Years	
Kevin Munsamy	BSc. Chem Eng.	Cand. Eng., ECSA,  Member of the National Association for Clean Air and is accredited with the South African Council for the Projects and Construction Management	10 years	Air Quality Impact Assessment.

### 1.3 Report Structure

This report has been prepared in compliance with the requirements of the National Environmental Management Act, 1998 (Act No. 107 of 1998) [“NEMA”] and the EIA Regulations contained in Government Notice (GN) No. R982 of 2014 as promulgated in terms of the NEMA [“EIA Regulations”] as amended up to and including GNR 326 in GN 40772 of 07 April 2017. A summary of the report structure, and the specific sections that correspond to the applicable regulations, is provided in (**Table 4**) below.

**Table 4: Environmental Impact Assessment Report Structure**

EIA Regulation	Description – EIA Regulation (2014) as amended on 07 April 2017	Content in Report
<b>Appendix 3(a):</b>	Details of – i. The Environmental Assessment Practitioner (EAP) who prepared the report; and ii. The expertise of the EAP, including a curriculum vitae;	<ul style="list-style-type: none"> <li>• Section 1.1</li> <li>• Appendix F</li> </ul>
<b>Appendix 3(b):</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;	<ul style="list-style-type: none"> <li>• Section 3</li> </ul>
<b>Appendix 3(c):</b>	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 a land where the property has not been defined, the coordinates within which the activity is to be undertaken;	<ul style="list-style-type: none"> <li>• Section 3</li> </ul>
<b>Appendix 3(d):</b>	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;	<ul style="list-style-type: none"> <li>• Section 4</li> <li>• Section 6</li> </ul>
<b>Appendix 3(e):</b>	A description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;	<ul style="list-style-type: none"> <li>• Section 9</li> </ul>
<b>Appendix 3(f):</b>	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 development footprint within the approved site as contemplated in the accepted scoping report;	<ul style="list-style-type: none"> <li>• Section 7</li> </ul>
<b>Appendix 3(g):</b>	A motivation for the preferred development footprint within the approved site as contemplated in the accepted scoping report;	<ul style="list-style-type: none"> <li>• Section 7</li> </ul>



EIA Regulation	Description – EIA Regulation (2014) as amended on 07 April 2017	Content in Report
<b>Appendix 3(h):</b>	<p>A full description of the process followed to reach the proposed development footprint within the approved site as contemplated in the accepted scoping report, including: –</p> <ul style="list-style-type: none"> <li>(i) details of the development footprint alternatives considered;</li> <li>(ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;</li> <li>(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;</li> <li>(iv) the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;</li> <li>(v) the impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts- <ul style="list-style-type: none"> <li>(aa) can be reversed;</li> <li>(bb) may cause irreplaceable loss of resources; and</li> <li>(cc) can be avoided, managed or mitigated;</li> </ul> </li> <li>(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;</li> <li>(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;</li> <li>(viii) the possible mitigation measures that could be applied and level of residual risk;</li> <li>(ix) if no alternative development footprints for the activity were investigated, the motivation for not considering such; and</li> <li>(x) a concluding statement indicating the location of the preferred alternative development footprint within the approved site as contemplated in the accepted scoping report;</li> </ul>	<ul style="list-style-type: none"> <li>• Section 4</li> <li>• Section 8</li> <li>• Section 11</li> <li>• Section 12</li> <li>• Section 14</li> <li>• Appendix E</li> </ul>
<b>Appendix 3(i)</b>	<p>A full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity, including-</p> <ul style="list-style-type: none"> <li>(i) a description of all environmental issues and risks that were identified during the EIA process; and</li> </ul>	<ul style="list-style-type: none"> <li>• Section 12</li> <li>• Section 14</li> </ul>

EIA Regulation	Description – EIA Regulation (2014) as amended on 07 April 2017	Content in Report
	(ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	
<b>Appendix 3(j)</b>	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 mitigated;	<ul style="list-style-type: none"> <li>• Section 14</li> <li>• Section 15</li> </ul>
<b>Appendix 3(k):</b>	Where applicable, a summary of the findings and recommendations of any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final assessment report;	<ul style="list-style-type: none"> <li>• Section 17</li> </ul>
<b>Appendix 3(l):</b>	An environmental impact statement which contains- (i) a summary of the key findings of the EIA: (ii) a map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred development footprint on the approved site as contemplated in the accepted scoping report indicating any areas that should be avoided, including buffers; and (iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives	<ul style="list-style-type: none"> <li>• Section 3</li> <li>• Section 20</li> <li>• Appendix C</li> </ul>
<b>Appendix 3(m)</b>	Based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation;	<ul style="list-style-type: none"> <li>• Section 17</li> <li>• Appendix B</li> </ul>
<b>Appendix 3(n)</b>	The final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment;	<ul style="list-style-type: none"> <li>• Section 8.6</li> <li>• Section 14</li> <li>• Section 15</li> </ul>

EIA Regulation	Description – EIA Regulation (2014) as amended on 07 April 2017	Content in Report
<b>Appendix 3(o)</b>	Any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorisation;	<ul style="list-style-type: none"> <li>Section 18</li> </ul>
<b>Appendix 3(p)</b>	A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;	<ul style="list-style-type: none"> <li>Assumption and limitation</li> </ul>
<b>Appendix 3(q)</b>	A reasoned opinion as to whether the proposed activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	<ul style="list-style-type: none"> <li>Section 7 &amp; Section 21</li> </ul>
<b>Appendix 3(r)</b>	Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded, and the post construction monitoring requirements finalised;	N/A
<b>Appendix 3(s)</b>	An undertaking under oath or affirmation by the EAP in relation to- (i) the correctness of the information provided in the reports; (ii) the inclusion of comments and inputs from stakeholders and I&APs; (iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and (iv) 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;	<ul style="list-style-type: none"> <li>Appendix A</li> </ul>
<b>Appendix 3(t)</b>	Where applicable, details of any financial provision for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	N/A
<b>Appendix 3(u)</b>	An indication of any deviation from the approved scoping report, including the plan of study, including- (i) any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and (ii) a motivation for the deviation;	N/A
<b>Appendix 3(v)</b>	Any specific information that may be required by the competent authority; and	N/A
<b>Appendix 3(w)</b>	Any other matters required in terms of section 24(4)(a) and (b) of the Act.	N/A

## 2 PROJECT TITLE

Arm Scor EIA Application in support to the Atmospheric Emissions License (AEL) Application for the operation of the Arm Scor Dockyard foundry in Simon's Town, CTM, Western Cape.

## 3 PROJECT LOCALITY

The project locality is described in terms of geographic locational context and site context, as explained in (**Section 3.1 & 3.2**) below.

### 3.1 Geographical Locational Context

The study area falls within the CTM at Simon's Town, Western Cape. The study area is situated at 34°11'31.9"S and 18°26'26.4"E, approximately 26km south-west of Cape Town on the shores of False Bay, located on the eastern side of the Cape Peninsula (**Figure 1**).

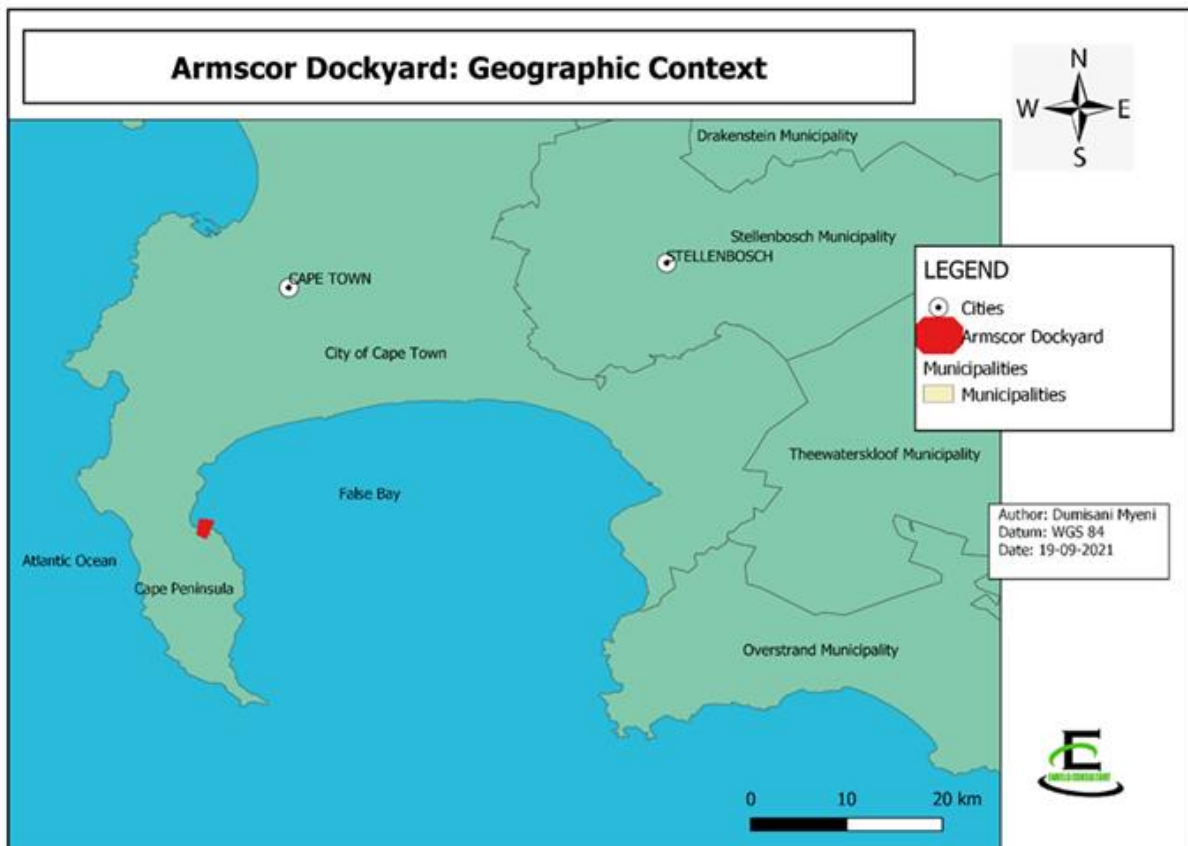


Figure 1: Geographic locational context of Arm Scor Dockyard

### 3.2 Site Locality Context (Site Description)

The ADF is situated within Erf 3779 at the dockyard of the SA Naval Base, at the end of Cole Point Road in Simon's Town which is in Ward 61 of the CTM.

The (**Table 5**) below, provides the Global Positioning System (GPS) co-ordinates for the foundry site.

**Table 5: Co-ordinates (Armsscor Dockyard foundry)**

Latitude /Longitude	Degrees	Minutes	Seconds
Armsscor Dockyard Foundry Location			
<b>South</b>	34°	11'	31.9"
<b>East</b>	18°	26'	26.4"
Armsscor Dockyard Facilities Perimeter (including offices and storages)			
<b>South</b>	34°	11'	30.70"
<b>East</b>	18°	26'	24.60"
<b>South</b>	34°	11'	29.88"
<b>East</b>	18°	26'	25.62"
<b>South</b>	34°	11'	34.68"
<b>East</b>	18°	26'	29.84"
<b>South</b>	34°	11'	35.16"
<b>East</b>	18°	26'	29.07"

The (**Table 6**) below, provides the 21-digits Surveyor General Code (SGC).

**Table 6: 21-digits Surveyor General Code**

C	0	1	6	0	0	5	4	0	0	0	0	3	7	7	9	0	0	0	0	0
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The ADF is situated within the South African (SA) Naval Base in Simon's Town, which is located at the foothills of the Cape Peninsula on the western shores of False Bay. The site has been developed and transformed since inception of the dockyard (**Figure 2**). The foundry in Simon's Town was established in 1968 and had been operational since.

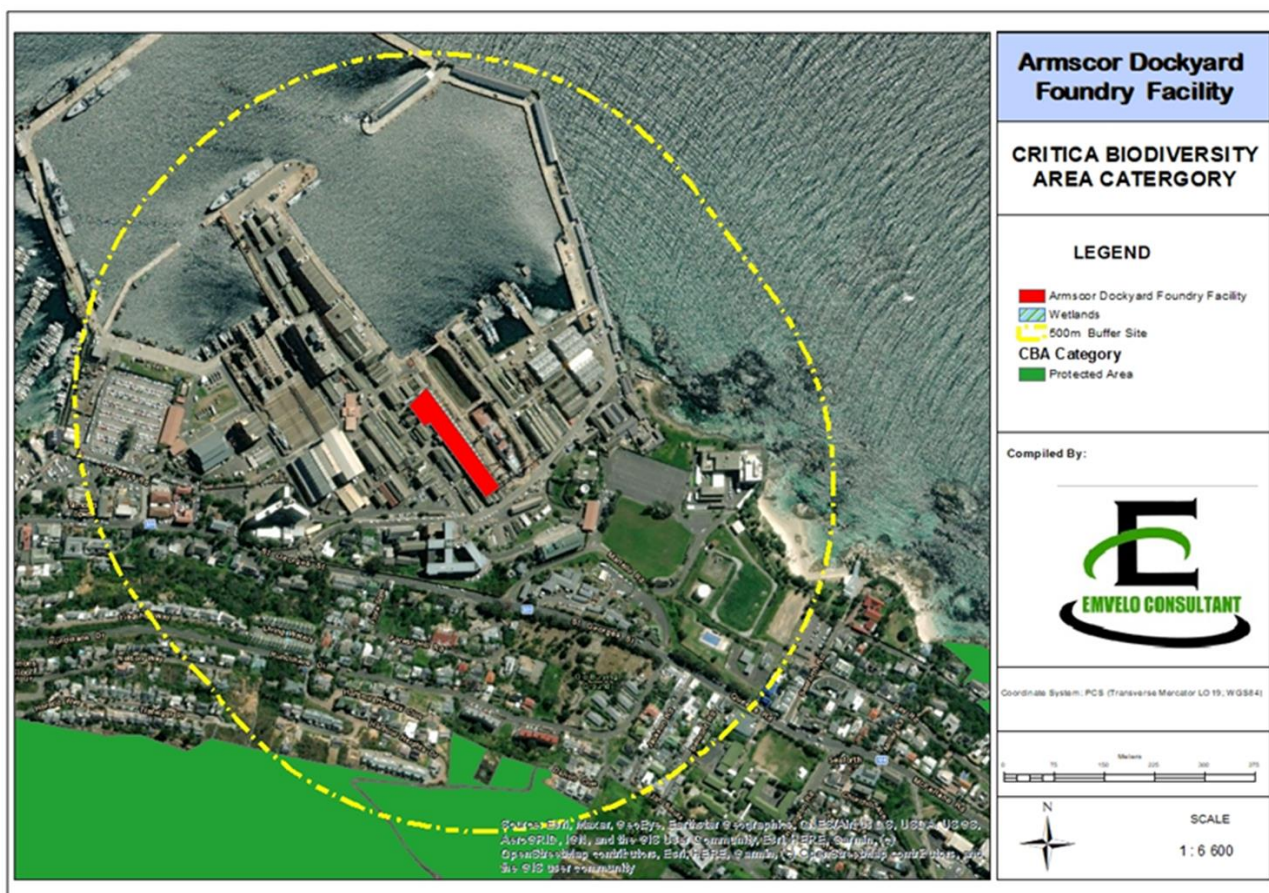


Figure 2: Locality map (Armcor Dockyard Foundry)

### 3.3 Site Access

The site can be accessed via the M3 from Cape Town towards Muizenberg. Travelling along Muizenberg, take the M4 and head towards Fish Hoek, past Fish Hoek continue on the M4 (St George's Street) towards Simon's Town and left to the end of Cole Point Road towards Simon's Town Naval Base.

## 4 CURRENT ACTIVITIES DESCRIPTION

The ADF in Simon's Town was established in 1968, was operated by SA Navy and had been operational since. Armcor operates a non-ferrous foundry by producing aluminium, copper, lead and zinc base alloy metal castings. The foundry operates five (5) diesel-fired furnaces: 3x 0.25T, 1x 0.5T and 1x 1T on an *ad hoc* basis, once or twice a week for three (3) hours. A zinc furnace and a gun metal/brass furnace are used at the foundry. It must be noted that the five furnaces do not operate simultaneously. Each furnace is dedicated to its desired product.



The foundry casts aluminium, copper, lead and zinc base alloy metal castings, in a batching process.

The furnaces for casting copper base alloy components, operates once a week for three (3) hours. The furnaces for casting zinc base alloy components, operates for (three) 3 days at four (4) hours/day. However, on many occasions, the operation has been less than three (3) days per week, as this depends on the quantity that required for casting. It is important to note that at times, the ADF does not operate for over a month due to no need for casting during that period.

The metal casting involves:

- ✚ Five (5) diesel-fired furnaces for melting metal alloys;
- ✚ Casting of molten metal into a mould containing a cavity of the desired shape to produce a metal product;
- ✚ Removal of the mould and excess metal through fettling process;
- ✚ Polishing and surface coating or finishing before the finished product can be dispatched.

During the above process the flue gases from the five (5) furnaces and the melting process are removed by the extractor fans and discharged into the atmosphere via stacks. The foundry metal casting process releases the flue gases of chemical compounds such as cadmium, lead, and sulphur dioxide. Each diesel-fired furnace is fitted with a filtration system, shut-off valves, and an extraction hood that is linked to the ducting.

The (**Table 7**) below outlines the major consumables at the dockyard foundry per month.

**Table 7: Major consumables (in tons per month at the dockyard foundry)**

Input material	Description	Tons/Month
Silica Sand	Silica sand mixed with chemicals	1.4
Sodium silicate	Mixed with silica sand	0.03

Breakdown agent	Mixed with silica sand	0.06
Zinc	Casting Zinc base alloys	0.5
Aluminium	Casting Aluminium base alloys	0.03
Copper	Casting Copper base alloys	0.3
Lead	Casting Lead base alloys	0
Coveral 11	Fluxing of Aluminium base alloys	0.001
Albral 2	Fluxing of Copper base alloys (Alu-Bronze)	0.004
Cuprex 1	Fluxing of Copper base alloys (Gunmetal)	0.004

#### 4.1 ADF Process Flow Description

The ADF does not operate daily. However, the foundry operates five (5) furnaces on an *ad hoc* basis, once or twice a week on a day shift, for approximately 3 hours/day. The furnaces used are a zinc furnace and a gun metal/brass furnace. The process flow as illustrated by **(Figure 3)** is discussed below.

A request is made either by the SA Navy or the Armscor Dockyard personnel for the foundry to produce metal castings. Project management then load the job cards on the system so that the foundry can execute the job. The foundry personnel confirm the job after checking the details, material specification, finish weights and the availability of correct materials and tools. Pattern making is the first stage for developing a new casting. The pattern is constructed either from wood or plastic materials and these patterns are re-used for other similar mouldings if required. A silica sand No2 (AFS 75), combined with a breakdown agent and sodium silicate, is mixed in a sand mixer to achieve chemically bonded sand of high refractoriness that maintains the shape of the mould during pouring.

The Armscor Dockyard foundry utilities both the sand moulds and die moulds. The die mould is made up of a high strength aluminium metal to produce the casting, these die moulds are permanent and are repeatedly used until they distort and are not usable. Armscor is in the process of acquiring the 3D modelling, which will provide an advantage as it allows a large variety of materials with more complex geometrics to be produced and this new technology will in turn reduce wastage at the foundry.



The foundry operates five (5) diesel-fired furnaces, 3 x 0.25T, 1 x 0.5T and 1 x 1T on an ad hoc basis, once or twice a week for duration of 3 hours during day shifts. A zinc furnace and a gun metal/brass furnace are used. Before melting can proceed, an ingot sample is sent to the laboratory to verify if the material conforms to the specification. To prevent cross contamination, all the base alloys are melted separately in their dedicated furnaces. Atmospheric emissions, being the main by-product from melting may include cadmium, lead, and sulphur dioxide.

Molten metal is transferred from the furnace to a ladle and held until it reaches the desired pouring temperature. The molten metal is then poured into the prepared moulds and allowed to solidify. It then goes through the solidification and cooling process. The casting needs to cool, often overnight (depending on the casting size) for ambient cooling before it can be removed from the mould. The moulding boxes are then separated, and the casting is removed and inspected by checking for any casting defects like misrun, porosity, shrinkage, slag inclusion, etc. If the casting shows any signs of defects, the casting is rejected, and the job is repeated. Since the foundry does not reclaim any sand, the sand residue is disposed in a dedicated skip and collected by the contracted service provider who manages waste disposal for the organisation.

After the casting has been inspected, the gating system is removed, often using electrical cut-off devices. A parting line flash is typically formed on the casting and must be removed by grinding or with chipping hammers, these are done at the fettling bay. Shot blasting, and propelling abrasive material at high velocity onto the casting surface, is often used to remove any remaining metal flash, refractory material, or oxides. Depending on the type of casting, there may be a need for machining. Any debris from the fettling bay is disposed via the waste management system in place. The accepted casting is dispatched to the client along with the Metallurgical Test Certificate. The job card is closed on the system and the relevant paperwork is filed accordingly.

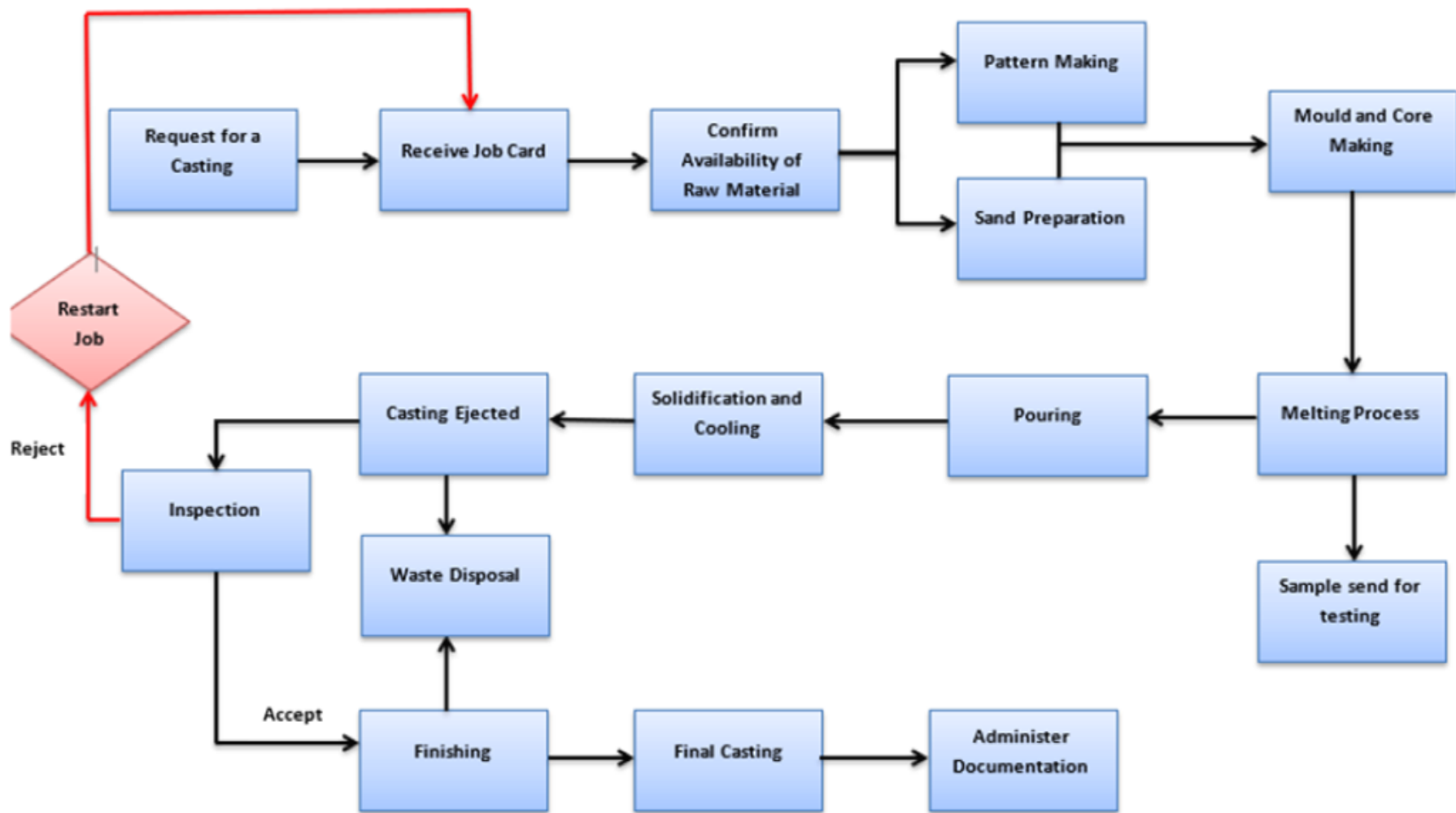


Figure 3: ADF Process Flow Description [Source: Armscor (SOC) Ltd]

Images of the ADF are illustrated below as (Figure 4).



**Figure 4: Images of the Armscor Dockyard foundry**

*Notes: A= 0.25Ton diesel-fired crucible furnace for melting copper base alloys; B= Foundry casting bay; C= Sand rabble skip; D= 1Ton and 0.25Ton diesel-fired crucible furnaces for casting zinc base alloys anodes.*

## 5 SUPPORTING SERVICES

The supporting services are the services which are linked to the operation of the ADF. These involve:

- ✚ Water and sanitation;
- ✚ Access roads (traffic); and
- ✚ Energy source (electricity and diesel use).

## **5.1 Water and Sanitation**

### *a) Water supply*

The ADF operates within the SA Naval base in Simon's Town. Therefore, the foundry shares the same water service with other facilities of Simon's Town Naval base. The water is supplied and serviced by the CTM.

### *b) Sanitation*

The ADF operates within the SA Naval base in Simon's Town. Therefore, the foundry shares the same sewage service with other facilities of Simon's Town Naval base. The Simon's Town Naval base facilities have a water-borne sewage system in place which manage the grey water onsite. The sewer system is connected to the municipal sewage system and serviced by the CTM.

### *c) Stormwater management*

The stormwater falling within the foundry facility is channelled with the existing storm water management system on site, which is connected to the CTM stormwater system.

## **5.2 Access Roads (Traffic)**

The access road to the ADF is linked to the SA Naval base dockyard, which was constructed during the establishment of Simon's Town. Since the foundry is within the naval base dockyard, the road network servicing the naval base provides the same service to the foundry, namely via a network of well-maintained tarred streets. The access road is linked from M4 (St George's Street) towards Simon's Town and to the end of Cole Point Road into the Simon's Town Naval base.

The traffic to and from the foundry is limited to the delivery of materials as well as the collection and removal of product and waste materials from the SA Naval Base. Other traffic is related to the arrival of staff to work. The access to the site does not affect any main road traffic. No significant traffic implications are envisaged, given that the scope of the foundry activities has not changed over 54 years and is not likely to change in the near future.

### 5.3 Energy Use

The energy use to support the foundry's operation is electricity and diesel.

#### a) Electricity

The foundry process is energy intensive and a significant emitter of GHG (CO<sub>2</sub>), due to the high fuel combustion. Most energy use can be attributed to the melting process (40-60% of the total energy input).

The ADF foundry shares the same service with other electricity facilities of Simon's Town Naval base. The electricity to Simon's Town Naval base is supplied by the CTM. The dockyard foundry uses electricity for other functions except for alloy melting process (furnaces).

#### b) Fuel

The foundry operates five (5) diesel-fired furnaces and used the fuel from the Naval base fuel storage facility. The foundry uses ± 400 litres/month of Ultra-Low Sulphur Diesel for the furnaces.

The GHG emission from this usage of diesel is approximately 12,58 tons of CO<sub>2</sub> per annum. The emission factor of diesel is 2.62kg CO<sub>2</sub> per litre of diesel burned.

## 6 LISTED AND SPECIFIED ACTIVITIES TRIGGERED

Armcor (SOC) Ltd will require an Environmental Authorisation (EA) for operation of a foundry within Simon's Town Naval base. **Table 8** below indicates the Listed activities in terms of the EIA 2014 Regulations (as amended on 07 April 2017) that are applicable to the proposed project.

**Table 8: Listed and specified activities triggered**

GNR & Listing Notice No.	Listed Activity	Description of the applicable listed activity	Applicability
<p><b>GNR No. 325 (7 April 2017) Listing Notice 2</b></p>	<p><b>Listed Activity 6</b></p>	<p>The development of facilities or infrastructure for any process or activity which requires a permit or licence or <u>an amended permit or licence</u> 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, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies;</p> <p>(iii) the development of facilities or infrastructure for the treatment of effluent, <u>polluted water</u>, wastewater or sewage where such facilities have a daily throughput capacity of 2 000 cubic metres or less; or</p> <p>(iv) <u>where the development is directly related to aquaculture facilities or infrastructure where the wastewater discharge capacity will not exceed 50 cubic metres per day</u></p>	<p>Arm Scor (SOC) Ltd in Simon’s Town intend to apply for an Atmospheric Emission License (AEL) with regard to the operations of the Arm Scor Dockyard foundry.</p> <p>Arm Scor Dockyard operates a non-ferrous foundry by producing aluminium, copper, lead and zinc base alloy metal castings. As a result, the operation of a non-ferrous foundry for casting of iron, steel and zinc releases emissions which requires an AEL.</p> <p>Emissions from the ADF comprise of aluminium, copper, lead and zinc base alloy metal castings production emissions. The most significant ducted source emissions will be from metal melting, which consist of PM, SO<sub>2</sub> and NO<sub>x</sub> (NO<sub>2</sub>) primarily. In addition, furnaces may be sources of lead, cadmium or sulphur oxides (SO<sub>x</sub>) emissions, depending on the type of fuel used to fire the furnace.</p>

## **7 ACTIVITY MOTIVATION**

The SA Naval Base in Simon's Town is the South African Navy's largest naval base and is the home port of the frigate and submarine flotillas, where the Armscor Dockyard is located.

Armscor (SOC) Ltd manages and operates the South African Naval dockyard in Simon's Town, Western Cape, as the South African Navy's third-line maintenance and refitting facility. This facility focusses on maintaining the required capabilities to support the SA Navy's operations, thereby providing for a planned preventative maintenance, corrective maintenance, upgrades, and reconstruction of SA Navy's vessels. The foundry also produces some of the components for the SA Navy vessels.

### **7.1 The need**

The activities of the ADF has been one of the key functions for the maintenance and reconstruction of the SA Navy vessels. This facility operates a non-ferrous foundry by producing aluminium, copper, lead and zinc base alloy metal castings. As a result, the operation of a non-ferrous foundry for casting of iron, steel and zinc releases emissions which requires an AEL. Emissions from the ADF comprise of aluminium, copper, lead and zinc base alloy metal castings production emissions. Armscor has been, since its operation, reporting to NAES regarding the emissions and received on the 18<sup>th</sup> of December 2019 a compliance notice from the City of Cape Town. As a result, Armscor (SOC) Ltd has applied for Section 22 (A) rectification in terms of AQA for the operation of the dockyard non-ferrous foundry. However, it must be noted that the foundry was established during 1968 and has been operational since, before the EIA Regulations were promulgated. Hence the Environmental Authorisation process has not followed the NEMA Section 24G process but followed the Scoping and EIA process.

This AEL application forms a combined process that runs parallel with the EIA process (simultaneous process) due to the requirement for Environmental Authorisation (EA). Armscor is required to obtain an EA in order to apply for the AEL.

## **7.2 Desirability**

Armcor (SOC) Ltd is committed to meeting the environmental legal requirements, and hence the application for the Section 22 (A) rectification in terms of AQA for the operation of the non-ferrous foundry. During this process, Amcor also intends to acquire the EA.

In addition, the ADF will have additional manufacturing capability to complement the current work at the foundry, such as the use of 3D modelling, which will provide an advantage as it allows a large variety of materials with more complex geometries to be produced and also reduces wastage, amongst others. This will involve the computer aided engineering and drawing capabilities that are not currently in the Armcor Dockyard and will ensure that the manufacturing environment is elevated to higher industry standards. This will give the ADF the edge to deliver more effectively on the mandate in terms of service delivery to the SA Navy and others.

## **8 SITE ALTERNATIVES**

The DFFE provides guidelines on the assessment of alternatives, to which the impact assessment must be considered. Regulations indicate that any alternatives considered in an assessment process must be reasonable and feasible. Additionally, I&APs must be afforded an opportunity to provide inputs into the process of formulating alternatives. Once a full range of potential alternatives have been identified, the reasonable and feasible alternatives should be formulated as activity alternatives for further consideration during the basic assessment or scoping and EIA process (DEAT,2004a; DEAT, 2006). These alternatives are: location (site), activity (project), site layout, design, scale, routing, scheduling, process, demand, input, technology, and no-go options.

It is, however, important to note that the regulation and guidelines specifically state that only 'feasible' and 'reasonable' alternatives should be explored. It also recognizes that the consideration of alternatives is an iterative process of feedback between the applicant and the appointed EAP, which in some instances culminates in a single preferred project proposal (DEAT, 2006).



After weighing all project alternatives for this project (Discrete Alternative Approach), the preferred 'Alternative A: Demand Alternative, Alternative B: Scheduling Alternatives, and Alternative C: Technology Alternative' were adopted as alternatives that will meet the stated need for and purpose of the project, by providing proper mitigation measures, as discussed below.

### **8.1 Alternative A (Demand Alternative)**

The 'Demand Alternative' arises when a demand for a certain product or service can be met by some alternative means" (DEAT,2004a). Therefore, as explained in (**Section 4**), the ADF does not operate on a daily basis. The foundry operates five (5) furnaces on an *ad hoc* basis. The furnaces for casting copper base alloy components, operates once a week for three (3) hours. The furnaces for casting zinc base alloy components, operates for (three) 3 days at four (4) hours/day. However, on many occasions it has been less than three (3) days per week, as this depends on the quantity that required for casting. It is important to note that at times, the ADF do not operate for over a month due to the lack of the need for castings.

The 'Demand Alternative' cannot be taken in isolation but will require strict adherence to integration of the 'Scheduling Alternative' which is discussed (in **Section 8.2**) below.

### **8.2 Alternative B (Scheduling Alternative)**

The 'Scheduling Alternative' involves scheduling activities in a different order or at different times and as such produce different impacts, which forms part of the project description (DEAT,2004a). Therefore, the 'Scheduling Alternative' requires that the ADF cast aluminium, copper, lead, and zinc base alloy metal, in batching process. This simply means that the orders which are placed (demand) as mentioned (in **Section 8.1**) will be consolidated, and the date for casting be scheduled based on consolidated orders, thus preventing the daily operation of the furnaces for metal casting.

Other factors such as the wind speed and direction must be taken into consideration when scheduling the foundry melting and casting processes, in order to prevent large scale dispersion and direction of sensitive environment (such as residential and business areas as well as environmental protected areas). The input from I&APs indicated that, the foundry operations is likely to have least impact during prevailing westerly winds.

The 'Scheduling Alternative' serves a similar purpose to that of 'Demand Alternative' as it limits the pollutant exposure during source-pathway-receptor (exposure pathways) within pollutants dispersion, from the environmental receptors (individual and population at risk), as the environmental receptors will not be exposed to pollution on a daily basis but at limited intervals, as the foundry furnaces and metal casting will be undertaken on a consolidated demand process and scheduled as guided by other factors, including the prevailing westerly winds.

### **8.3 Alternative C (Design & Technology Alternative).**

The design alternatives form an integral part of the project proposal and becomes a part of the project description and need not be evaluated as separate alternatives (DEAT, 2004a). This 'Design Alternative' is in line with foundry furnace operational criteria, linked to foundry technology. Therefore, this foundry could not be isolated to 'Technology Alternative'. Meanwhile the technology to be used in the activity, refers to a consideration of method of operation, such that an alternative includes the option of achieving the same goal by using a different method or process (DEA&DP, 2007). The flue gases from five furnaces emanating from melting metal base alloys and the casting process are removed by extraction fans and discharged into the atmosphere via stacks. It is essential that exhaust volumes are sufficient to control generated fumes. Heavy fume generation during charging, the initial melt stage and any refining may increase the air volume required and consequently the collector size. This will require pollution abatement measures (filtration) to reduce chemical compounds from being vented out to environmental receptors from the pollutant dispersion.

The ADF operates two (2) independent extraction systems for the copper and aluminium furnaces, and the zinc furnaces, with stacks equipped with steel mesh filters.

#### *Copper and Aluminium Base Alloy Furnace and Stack:*

- ✚ Three (3) copper and aluminium base alloy furnaces (2x 0.25Ton and 1x 0,5Ton);
- ✚ Each diesel-fired furnace is fitted with an extraction hood that is linked to the ducting, filtration and shut-off valves and a centrifugal fan of 17 000m<sup>3</sup>/h.

**Table 9: Copper and Aluminium Base Alloy Stack Specifications**

Stack Component	Specifications
Stack dimension	Segment 1: 120m <sup>2</sup> Segment 2: 360m <sup>2</sup>
Height above ground	4.2m
Vertical/Horizontal	Combination of vertical and horizontal. The three suction points at the hoods are horizontal and the main extraction point is vertical.
Velocity	14.8 m/s
Volumetric Flowrate	17 000m <sup>3</sup> /h

**Zinc Alloy Base Furnaces and Stack:**

- ✚ Two (2) Zinc base alloy furnaces (1x 0.25Ton and 1Ton);
- ✚ Each diesel-fired furnace is fitted with an extraction hood that is linked to the ducting, filtration and shut-off valves and a centrifugal fan of 3 720m<sup>3</sup>/h.

**Table 10: Zinc Base Alloy Stack Specifications**

Stack Component	Specifications
Stack dimension	0.3m
Height above ground	6.65m
Vertical/Horizontal	Combination of vertical and horizontal. The two suction points at the furnace hood are horizontal and the main extraction point is vertical.
Velocity	14.9 m/s
Volumetric Flowrate	3 720m <sup>3</sup> /h

**8.4 Alternative D (Location Alternative)**

The 'Location Alternative' could be considered part of site layout alternatives. However, the 'Location Alternative' is considered for the entire proposal or for a component of a proposal, locations that are geographically quite separate, and alternative locations that are in close proximity (DEAT, 2004a). The operation of the foundry is highly dependent on its close proximity to the dockyard. Processing of metals for the navy's fleet close to the docks significantly reduces the transport footprint, safety risks, as well as costs. Additionally, the

foundry, in its present location, is highly dependent on the infrastructure and utility services that have developed around it since the commissioning of the dockyard foundry in 1968.

Therefore, re-locating the existing foundry away from its present site has major financial and logistical implications, as well as creating undesirable impacts at another site.

### **8.5 Alternative E (No-Go Alternative)**

The cessation of the ADF's operations will result in Armscor (SOC) Ltd not being able to provide components for repair and servicing of SA Navy vessels in Simon's Town. As a result, Armscor will not be in a position to render adequate and efficient service to the SA Navy which will hinder the navy in fulfilling its mandate, namely participating in counter-piracy operations, fishery protection, search, and rescue, and maritime law enforcement for the benefit of South Africa and its international partners. This in turn, will hamper the South African National Defence Force's (SANDF) capability to conduct its mandate of protecting the sovereignty of South Africa (**Refer to Section 7**). Therefore, projects that are proposed on public land and/or for the public good should consider the major development alternatives that would meet the stated need for and the purpose of the project (DEAT, 2004a).

The EAP is therefore of the view that the NO-GO option is undesirable in the face of security, social and economic needs of South Africa.

### **8.6 Preferred Alternative**

The role of alternatives is to find the most effective way of meeting the need and purpose of the proposal, either through enhancing the environmental benefits of the proposed activity, and or through reducing or avoiding potentially significant negative impacts (DEAT, 2004a).

The 'Alternative A: Demand Alternative', will limit the pollutant exposure during source-pathway-receptor within pollutants dispersion, as the environmental receptors will not be exposed to pollution on a daily basis but within limited intervals, as the foundry will consolidate the operations and only operate to cast metals for components which are currently in demand at certain times only.

'Alternative B: Scheduling Alternative', serves a similar purpose to that of 'Demand Alternative' as it limits the pollutant exposure during source-pathway-receptor and to the environmental receptors from pollutant dispersion within limited intervals, and guided by other factors such as wind speed and direction. In this regard days with westerly winds have been considered favourable by I&APs, for the operation of foundry furnaces and castings as it is likely to have least impact during such meteorological conditions.

With 'Alternative C: Design & Technology Alternative', the ADF operates two (2) independent extraction systems for the copper and aluminium furnaces, and the zinc furnaces, with stacks equipped with steel mesh filters. Each diesel-fired furnace is fitted with an extraction hood that is linked to the ducting, filtration and shut-off valves and a centrifugal fan of 17 000m<sup>3</sup>/h. This option requires pollution abatement measures (filtration) to reduce chemical compounds from being vented out to environmental receptors (Individual and population at risk) within pollutants dispersion.

These above three alternatives cannot be evaluated in isolation as these are interlinked to one another.

Although, there are impacts associated with these preferred alternatives. However, mitigation measures to address the identified impacts are presented in this report by the various specialists on the project team. The adherence to mitigation measures will render the impacts to be minimal. The mitigation measures are discussed under (**Section 14**) and the EMPr.

## **9 APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES**

In terms of the Environmental Regulations promulgated under the NEMA, an EIA must be conducted for any development or activity that requires an EA. The listed activities in the NEMA, relevant to this project, that triggers the need for an EA are listed below:

**Table 11: Environmental Statutory Framework**

Legislation	Relevance
Constitution of the Republic of South Africa, (No. 108 of 1996)	<ul style="list-style-type: none"> <li>➤ Chapter 2 – Bill of Rights.</li> <li>➤ Section 7: The right to progressive realisation of basic human rights</li> <li>➤ Section 9: The right to equality and special measures to overcome unfair discrimination and disadvantage</li> <li>➤ Section 24 – Environmental Rights/ Health Or Well-Being / Depletion Of Natural Resources</li> <li>➤ Section 32: Access to Information</li> <li>➤ Section 33: Administrative Decisions</li> <li>➤ Section 38: Locus Standi</li> <li>➤ Section 68: Authority for Provincial Legislation</li> <li>➤ Section 231: International agreements</li> </ul>
National Environmental Management Act (NEMA) (No. 107 of 1998)	<ul style="list-style-type: none"> <li>➤ Section 2: Principles in Environmental Management</li> <li>➤ Section 24: Environmental Authorisations and/or Norms and Standards (EA)</li> <li>➤ Section 24G: Rectification Application</li> <li>➤ Section 24J: Implementation Guidelines</li> <li>➤ Section 24L: Alignment of Environmental Authorisations, including Integrated Environmental Authorisations)</li> <li>➤ Section 24N: Environmental Management Programmes, Rehabilitation of Disturbed Areas and Closure Plan</li> <li>➤ Section 24P: Financial Provision for Remediation of environmental damage</li> <li>➤ Section 24Q: Monitoring and Performance Assessment (Environmental Audit) on EMPr's</li> <li>➤ Section 24S: Management of Residue Stockpiles and Residue Deposits</li> <li>➤ Section 24M: Exemption from Application of Certain Provisions of The Act</li> <li>➤ Section 28: Duty of Care and Remediation of Environmental Damage</li> <li>➤ Section 28: Soil Pollution</li> <li>➤ Section 29: Protection of Workers on Refusal to Undertake Work</li> <li>➤ Section 30: Emergency Incident Causing Danger to Public or Environment</li> <li>➤ Section 30A: Emergency Situation - Request for Directive to undertake listed activity without EA</li> <li>➤ Section 31: Access to Environmental Information and Protection of Workers</li> <li>➤ Section 32: Enforcement of Environmental Laws</li> <li>➤ Section 34: Liabilities in Criminal Offences Under Environmental Laws</li> <li>➤ Section 39: Control over products which could harm the environment</li> <li>➤ Section 43: Appeals (Ch 9, Sec 43)</li> <li>➤ Section 44 and 47: Regulations</li> <li>➤ Section 47A: Regulations, Legal Documents and Steps Not In Compliance With Procedural Requirements</li> <li>➤ Section 47B: Consultation with other Departments</li> <li>➤ Section 47C: Extension of Time Periods</li> </ul>

Legislation	Relevance
	<ul style="list-style-type: none"> <li>➤ Section 47D: Delivery of Documents</li> <li>➤ Section 49A and 49B: Offences and Penalties</li> </ul>
GN No. 326 (7 April 2017)	<ul style="list-style-type: none"> <li>➤ Purpose - regulate the procedure and criteria as contemplated in Chapter 5 of NEMA relating to the preparation, evaluation, submission, processing, and consideration of, and decision on, applications for environmental authorisations for the commencement of activities, subjected to an EIA, in order to avoid or mitigate detrimental impacts on the environment, and to optimise positive environmental impacts, and for matters pertaining thereto.</li> </ul>
	<ul style="list-style-type: none"> <li>➤ Purpose – to identify activities that would require environmental authorizations prior to commencement of that activity and to identify competent authorities in terms of sections 24(2) and 24C of NEMA.</li> <li>➤ The investigation, assessment, and communication of the potential impact of activities must follow the procedure as prescribed in regulations 19 and 20 of the EIA Regulations published in terms of section 24(5) of the Act. However, according to Regulation 15(3) of GN No. 327, Scoping and an Environmental Impact Report (S&amp;EIR) must be applied to an application, if the application is for two or more activities as part of the same development for which a S&amp;EIR must already be applied in respect of any of the activities.</li> <li>➤ Listed Activities that are relevant to this project are: <b>Listing Notice 2, Activity 6.</b></li> </ul>
National Water Act (Act No. 36 of 1998)	<ul style="list-style-type: none"> <li>➤ Chapter 3 – Protection of water resources.</li> <li>➤ Section 19 – Prevention and remedying effects of pollution.</li> <li>➤ Section 20 – Control of emergency incidents.</li> <li>➤ Chapter 4 – Water use.</li> <li>➤ Authority – Department of Water and Sanitation (DWS).</li> </ul>
NEMA, 1998 - GN R982 of 4 December 2014 – as amended by GN 326 of 07 December 2017 EIA Regulations.	<ul style="list-style-type: none"> <li>➤ Regulation 1 and 2: Interpretation, Purpose and Commencement of Regulations)</li> <li>➤ Regulation 3: Timeframes)</li> <li>➤ Regulation 4: Decision on Applicant and Notification to I&amp;AP's</li> <li>➤ Regulation 5 and 6: General Requirements for Applications</li> <li>➤ Regulation 7, 8 and 9: Consultations between Competent Authority and other relevant State Departments</li> <li>➤ Regulation 10 and 11: Competent Authority - Right of access to information</li> <li>➤ Regulation 12, 13 and 14: EAP's and Specialists' Appointments and Conditions</li> <li>➤ Regulation 15: Assessment Process to be followed</li> <li>➤ Regulation 16, 17 and 18: Requirements applicable to the EA Application</li> <li>➤ Regulation 19 and 20: Basic Assessment Report submitted to Competent Authority</li> <li>➤ Regulation 21, 22, 23 and 24: S&amp;EIR submission to Competent Authority</li> <li>➤ Regulation 25 and 26: Issue and Content of an Environmental Authorisation</li> <li>➤ Regulation 31, 32 and 33: Amendment of Environmental Authorisation</li> <li>➤ Regulation 34: Audits on EA's, EMPr's and Closure Plans</li> <li>➤ Regulation 36 and 37: Amendments to an EMPr and Closure Plan</li> <li>➤ Regulation 38: Suspension and Withdrawal of Environmental Authorisation</li> </ul>

Legislation	Relevance
	<ul style="list-style-type: none"> <li>➤ Regulation 39, 40, 41, 42, 43 and 44: Public Participation</li> <li>➤ Regulation 45, 46 and 47: General Matters</li> <li>➤ Regulation 48: Offences</li> </ul>
National Environmental Management Air Quality Act (Act No. 39 of 2004)	<ul style="list-style-type: none"> <li>➤ Section 12 - Ambient air quality monitoring</li> <li>➤ Section 15 - Air Quality Management Plan development &amp; implementation</li> <li>➤ Section 32 – Dust control</li> <li>➤ Section 34 – Noise control</li> <li>➤ Section 37 - Atmospheric emission licensing</li> <li>➤ Authority – Department of Forestry, Fisheries and Environment (DFFE)</li> </ul>
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	<ul style="list-style-type: none"> <li>➤ Section 43-48: Biodiversity Management Plans (Ecosystems, Indigenous Species or Migratory Species)</li> <li>➤ Section 51-55: Threatened or Protected Ecosystems and Threatening Processes</li> <li>➤ Section 56-58: Threatened or Protected Species</li> <li>➤ Section 64-67 and 69: Alien Species Posing a potential threat to Biodiversity</li> <li>➤ Section 70 and 77: Invasive Species posing a potential threat to Biodiversity</li> <li>➤ Section 101 and 102: Offences and Penalties Authority – DFFE.</li> </ul>
Occupational Health & Safety Act (Act No. 85 of 1993)	<ul style="list-style-type: none"> <li>➤ Provisions for Occupational Health &amp; Safety Regulation 9A and 14: Hazardous Chemicals Substances</li> <li>➤ Regulation 10 and 15: Disposal of HCS Waste</li> <li>➤ Authority – Department of Labour</li> </ul>
National Heritage Resources Act (Act No. 25 of 1999)	<ul style="list-style-type: none"> <li>➤ Section 34 – protection of structures older than 60 years.</li> <li>➤ Section 35 – protection of heritage resources.</li> <li>➤ Section 36 – protection of graves and burial grounds</li> <li>➤ Section 51: Offences and Penalties</li> <li>➤ Authority – Provincial Heritage Agency: Heritage Western Cape</li> </ul>
National Road Traffic Act 1996 (Act No. 96 of 1996)	<ul style="list-style-type: none"> <li>➤ Section 51: Waste on or near national road</li> <li>➤ Authority – Western Cape Department of Transport and Public Works</li> </ul>
Environment Conservation Act (Act 73 Of 1989)	<ul style="list-style-type: none"> <li>➤ Section 29: Offences and Penalties</li> <li>➤ Section 31A: Damage to Environment</li> </ul>
Promotion of Access to Information Act,	<ul style="list-style-type: none"> <li>➤ Section 11 and 12: Access to Records of Public Bodies</li> <li>➤ Section 50: Access to Record of Private Bodies</li> <li>➤ Section 51: Publication and Availability of Certain Records</li> <li>➤ Section 70: Mandatory Disclosure by Public/Private Bodies</li> </ul>



Legislation	Relevance
2000 (Act No 2 of 2000)	
Water Services Act, 1997 (Act No. 108 of 1997)	<ul style="list-style-type: none"> <li>➤ Section 3: Right of Access to Basic Water Supply and Sanitation</li> <li>➤ Section 9: National Standards on Provision of Water Services</li> <li>➤ Section 11: Duty to Provide Access to Water Services</li> <li>➤ Section 12-18: Water Services Development Plans</li> <li>➤ Section 27: Monitoring of Water Services Provided</li> <li>➤ Section 77: Transferability of Servitudes</li> </ul>
Hazardous Substances Act, 1973 (Act No. 15 of 1973)	<ul style="list-style-type: none"> <li>➤ Section 2-3: Grouped Hazardous Substances</li> <li>➤ Group I – Hazardous Substances (GN R 452 Of 25 March 1977 and GN 801 Of 31 July 2009)</li> <li>➤ Group II Hazardous Substances (GN R1382 Of 12 August 1994)</li> <li>➤ Group III Hazardous Substances (GN R1302 Of 14 June 1991)</li> <li>➤ Group IV Hazardous Substances (GN R247 of 26 February 1993)</li> <li>➤ Section 18 and 19: Offences and Penalties</li> </ul>
Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947)	<ul style="list-style-type: none"> <li>➤ Section 3 and 7: Pest Control Operators, and use of fertilizers, farm feeds, agricultural, stock remedies and sterilising plants</li> <li>➤ Section 7: Sale of fertilizers, farm feeds, agricultural remedies, and stock remedies</li> <li>➤ Section 7BIS: Prohibition on acquisition, disposal, sale or use of certain fertilizers, farm feeds, agricultural remedies, and stock remedies</li> <li>➤ GN R181 of 7 February 2003 - Regulation Relating to the Prohibition of the Sale, Acquisition, Disposal or Use of Agricultural Remedies</li> <li>➤ Containers And Labels of Agricultural and Stock Remedies</li> </ul>
	<ul style="list-style-type: none"> <li>➤ GN 98 of 11 February 2011 - Pest Control Operator Regulations</li> </ul>
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)	<ul style="list-style-type: none"> <li>➤ Section 7-9: National Norms and Standards, Provincial Norms and Standards and Waste Service Standards</li> <li>➤ Section 14 and 15: Priority Waste</li> <li>➤ Section 16: Duty on Waste Holder to Implement Reasonable Measures</li> <li>➤ Section 17: Reduction, Re-Use, Recycling and Recovery of Waste</li> <li>➤ Section 43-59: Waste Management Licences for Listed Waste Activities or Compliance to Norms and Standards</li> <li>➤ Section 21 and 22: Storage of Waste</li> <li>➤ Section 23 and 24: Waste Collection needs to be Authorised by the Municipality</li> <li>➤ Section 25: Waste Transportation</li> <li>➤ Section 26: Unauthorised Disposal of Waste and Protection of Environment</li> <li>➤ Section 25: Protection of Environment at Private Land</li> <li>➤ Section 35-41: Contaminated Land</li> <li>➤ Section 67 and 68: Offences and Penalties</li> <li>➤ Regulation 4: Waste Classification</li> </ul>

Legislation	Relevance
	<ul style="list-style-type: none"> <li>➤ Regulation 5: Safety Data Sheets for Hazardous Waste</li> <li>➤ Regulation 6: General Obligations on Waste Generators, Transporters and Managers</li> <li>➤ Regulation 7: Waste Treatment</li> <li>➤ Regulations 8: Waste Assessment - Waste Disposal to Landfill - Obligations on Generators and Managers</li> <li>➤ Regulation 9: Waste Management Activities that do not require a Waste Management Licence</li> <li>➤ Regulation 10: Records on Waste Generation and Management</li> </ul>
Advertising on Roads and Ribbon Development Act, 1940 (Act No. 21 of 1940)	<ul style="list-style-type: none"> <li>➤ Section 8: Articles or materials on or near public roads</li> </ul>
Health Act, 1977 (Act No. 63 of 1977)	<ul style="list-style-type: none"> <li>➤ Section 20: Waste being a threat to human health</li> </ul>
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	<ul style="list-style-type: none"> <li>➤ Section 5: Prohibition on the Spreading of Weeds</li> <li>➤ Section 8 and 9: Soil Conservation Schemes</li> <li>➤ Regulation 8: Managing the Flow Pattern of Run-off Water</li> <li>➤ Regulation 12: Burning of Veld, Prevention and Control of Veld Fires</li> <li>➤ Regulation 15: Weeds and Invader Plants</li> </ul>
National Forests Act, 1998 (Act No. 84 of 1998)	<ul style="list-style-type: none"> <li>➤ Section 7: Indigenous trees</li> <li>➤ Section 12-15: Protected Trees (All Areas)</li> <li>➤ Section 16: Registration in Title Deeds</li> <li>➤ Section 61-64: Offences and Penalties</li> </ul>
National Veld and Forest Fire Act, 1998 (Act No. 101 of 1998)	<ul style="list-style-type: none"> <li>➤ Section 9 and 10: Fire Danger Rating</li> <li>➤ Section 17-19 and 34: Firebreaks</li> <li>➤ Section 24 and 25: Offences and Penalties</li> </ul>
National Environmental Management: Protected Areas Act, 2003 (Act No 57 of 2003)	<ul style="list-style-type: none"> <li>➤ Section 18 and 19: Special Nature Reserves</li> <li>➤ Section 23-26: Nature Reserves</li> <li>➤ Section 28 and 29: Protected Environments</li> <li>➤ Section 37: Management of Protected Areas</li> <li>➤ Section 38-42: Management Plans in Protected Areas</li> <li>➤ Section 43: Monitoring performance of Protected Areas</li> <li>➤ Section 45-47: Access to Protected Areas</li> </ul>

Legislation	Relevance
	<ul style="list-style-type: none"> <li>➤ Section 48: Restricted activities in Protected Areas</li> <li>➤ Regulation 49: Regulation or Restriction of Activities in Protected Areas</li> <li>➤ Section 89: Offences and Penalties</li> </ul>

Other applicable legal requirements:

- a) City of Cape Town Air Quality Management By-Law, 2010
- b) City of Cape Town Air Quality Management Amendment By-Law, 2021
- c) Air Quality Management Plan for the City of Cape Town Policy

## 10 EIA PROCESS AND METHODOLOGY

The EIA for Armscor in support to the Atmospheric Emissions License (AEL) Application for the operation of ADF, comprises two main phases, namely the Scoping phase and the EIA phase.

In accordance with the provisions of Sections 24(5) and Section 44 of the NEMA the Minister has published Regulations (GN R. 982) pertaining to the required process for conducting EIA's in order to apply for, and be considered for, the issuing of an EA. These EIA Regulations provide a detailed description of the EIA process to be followed when applying for EA for any listed activity.

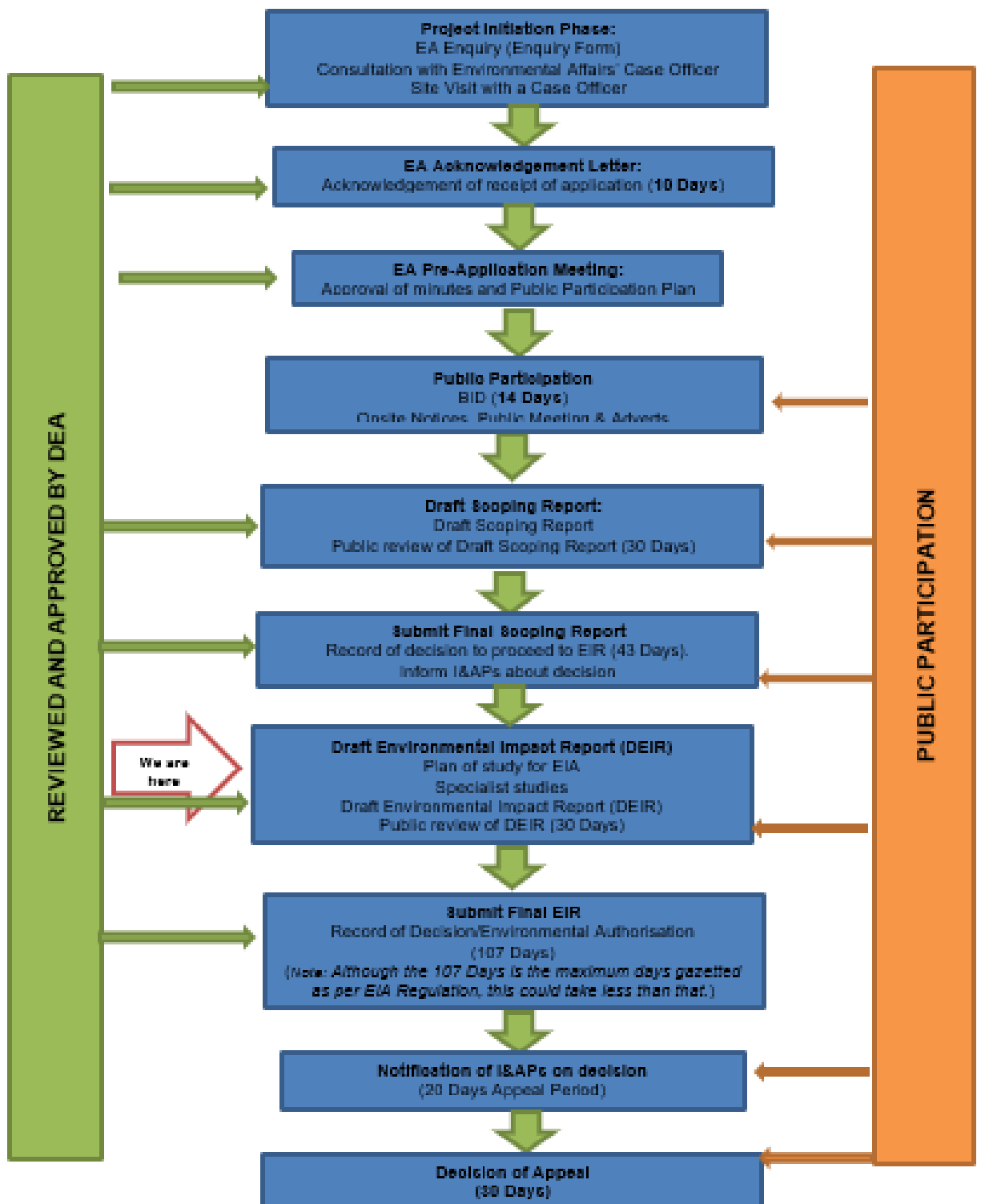


Figure 5: EIA process flow

## 11 STAKEHOLDER ENGEEMENT

Section 24 (4) (a) (v) of NEMA, provides that the procedures for the investigation, assessment and communication of the potential consequences or impacts of activities on the environment, must ensure, with respect to every application for an EA, the public information and participation procedures which provide all interested and affected parties, including all organs of state in all spheres of government that may have jurisdiction over any aspect of the activity, with a reasonable opportunity to participate in those information and participation procedures.

The purpose of the Public Participation Process (PPP) and stakeholder engagement process is to:

- ✚ Provide an opportunity for I&APs to obtain clear, accurate and comprehensible information about the proposed activity, its alternatives or the decision and the environmental impacts thereof;
- ✚ Provide I&APs with an opportunity to indicate their viewpoints, issues and concerns regarding the activity, alternatives and / or the decision;
- ✚ Provide I&APs with the opportunity to suggest ways of avoiding, reducing or mitigating negative impacts of an activity and enhancing positive impacts;
- ✚ Enable the applicant to incorporate the needs, preferences and values of I&APs into the activity;
- ✚ Provide opportunities to avoid and resolve disputes and reconcile conflicting interests;
- ✚ Enhance transparency and accountability in decision-making;
- ✚ Identify all significant issues for the project; and
- ✚ Identify possible mitigation measures or environmental management plans to minimise and/or prevent negative environmental impacts and maximize and/or promote positive environmental impacts associated with the project.

### 11.1 Legal Compliance

The PPP must comply with several important sets of legislation that require public participation as part of an application for authorisation or approval, namely but not limited to:

- ✚ The National Environmental Management Act (Act No. 107 of 1998 – NEMA);

## 11.2 Identification of Interested and Affected Parties

Adherence to the requirements of the above-mentioned Acts will allow for an Integrated PPP to be conducted, and in so doing, satisfy the requirement for public participation referenced in the Acts. The details of the Integrated PPP followed are provided below.

## 11.3 Initial Notification of I&APs

The I&AP databases compiled for various past environmental authorisation processes within the jurisdiction of CTM and nature of operations (foundry), have been utilised towards compiling a pre-notification register of key I&APs to be notified of the EA Application. The I&AP database includes amongst others: landowners, communities, regulatory authorities and other specialist interest groups. Additional I&APs have been registered during the initial notification and call to register period. The I&APs database will continue to be updated throughout the duration of the EIA process. A full list of I&APs is attached in (**Appendix E**).

### 11.3.1 Consultation with Authorities

The relevant authorities required to review the proposed project and provide an EA were consulted from the outset of this study and have been engaged throughout the project process. In terms of NEMA Section 24 (C), the lead decision-making authority for this application for EA is the National Department of Forestry, Fisheries and Environmental (DFFE).

However, other authorities with jurisdiction over elements of the receiving environment or project activities will also be consulted and listed as I&APs. Therefore, the following are also noted as key commenting authorities:

- ✚ Department of Forestry, Fisheries and the Environment: Air Quality Authorisation;
- ✚ Department of Environmental Affairs and Development Planning Western Cape Government;
- ✚ City of Cape Town Community Services and Specialised Environmental Health Air Quality Management Unit.

Authority consultation included the following activities:

- ✚ Submission of EA Enquiry to DFFE
- ✚ The EA Pre-Application Meeting was convened with DFFE on 29<sup>th</sup> June 2021 (**Refer to Appendix E** for a copy of the minutes).
- ✚ An application for authorisation in terms of NEMA (Act 107 of 1998), was submitted to DFFE, has been registered and given the following reference number: **REF: 14/12/16/3/3/2/2132.**

### 11.3.2 Consultation with other relevant authorities

The Background Information Document (BID) and Draft Scoping Report regarding the project was provided to all relevant authorities and agencies, together with a registration and comment form formally requesting their input into the EIA process. The authorities include *inter alia* as attached in (**Appendix E**):

- ✚ Western Cape: Department of Environmental Affairs and Development Planning (DE&DP);
- ✚ City of Cape Town Directorate: Specialised Environmental Health Services and Air Quality Management;
- ✚ South African Biodiversity Conservation;
- ✚ South African National Parks;
- ✚ Heritage Western Cape;
- ✚ Department of Water and Sanitation (DWS);
- ✚ Department of Transport and Public Works
- ✚ Department of Economic Development and Tourism;
- ✚ South African Heritage Agency;
- ✚ Flag Officer Commanding Naval Base (Simon's Town);

### 11.3.3 Notification of Public Stakeholders

Section 41 of Chapter 6 of the EIA regulations have listed the different options, to be used when notifying the I&APs. The PP process for this project was conducted, as detailed in (**Table 10**) and indicated by the green blocks.

**Table 12: Notification of I&APs**

<b><i>All the Interested and Affected parties were notified of the application by-</i></b>		
Fixing a notice board at the place conspicuous to and accessible by the public at the boundary, on the fence, or along the corridor of any alternative sites:  <i>Erected by Naval Base entrance, Public Parking at Simon's Town Naval Base, Simon's Town Information Board.</i>	<b>YES</b>	<b>NO/NA</b>
Any alternative site also mentioned in the application	<b>YES</b>	<b>NO/NA</b>
<i>Has a written notice been given to-</i>		
Landowner or person in control if the applicant is not in control of the land:  <i>South African Navy is the owner of SA Naval Dockyard</i>	<b>YES</b>	<b>NO/NA</b>
The municipal councillor of the Ward in which the site and alternative site of the proposed activity.  <i>Ward 61 Cllr: Simon Liell-Cock</i>	<b>YES</b>	<b>NO/NA</b>
The municipality which has jurisdiction in the area and other organs of state:  <i>City of Cape Town Metropolitan</i>	<b>YES</b>	<b>NO/NA</b>
<i>Placing an advertisement in-</i>		
Local newspaper ( <i>False Bay Echo, 2/09/2021</i> ); National News Paper ( <i>Mail &amp; Guardian, 10/09/2021</i> )  AEL Application Advert ( <i>False Bay Echo, 14/07/2022</i> ).	<b>YES</b>	<b>NO/NA</b>
Any official Gazette that is published specifically for providing public notice of applications	<b>YES</b>	<b>NO/NA</b>
One provincial newspaper, any official Gazette that is published with the purpose of providing public notice of applications.	<b>YES</b>	<b>NO/NA</b>

### 11.4 Availability of the Draft Scoping Report

Notification regarding the availability of the Scoping Report for public review was given in the following manner to all registered I&APs to ensure that a fair and inclusive public participation process was adopted, in accordance with both, the EIA regulations of 2014 as amended in



2017, as well as the Covid 19 protocol as stipulated in the Disaster Management Act, 2002 (Act No. 57 of 2002) and published on 29 April 2020.

The Draft Scoping Report was made available for public review through the following interventions as described in (**Table 13**) and was re-circulated for 30 days for comment from **14<sup>th</sup> of February 2022** to the **15<sup>th</sup> of March 2022**.

**Table 13: Availability of Draft Scoping Report**

Task	Action
Draft Scoping Report.	<p>The DFFE will receive Draft Scoping report, Draft EIR and EIR through the online system, via uploading at online system: <a href="https://sfiler.environment.gov.za:8443">https://sfiler.environment.gov.za:8443</a></p> <p>Other stakeholders identified and listed on the I&amp;APs register received an electronic copy of the Draft Scoping Report through e-mails, or CD and hard copies were delivered, based on their request. Comments were received through the same lines of communications or depending on the preferred method of the stakeholders.</p> <p>As for the general community, the Draft Scoping Report, was forwarded to the Ward Councillor and the focus group as an electronic (CD &amp; email) version, as well as hardcopy documents based on their specific request. The Ward Councillor and focus group was required to forward the electronic copies of the Draft Scoping Report to the executive members of the community (including ward committee members, community and organizational leaders). The executive members were then tasked to further forward the Draft Scoping Report to individual community members, based on the request. This was conducted in compliance to Covid-19 protocols as stipulated in Disaster Management Act, 2002 (Act No. 57 of 2002) and published on 29 April 2020.</p> <p>The community were also given the opportunity to have their comments on the scope of the project through the use the communication snowball effect in a reverse approach, until the information reaches the EAP, or direct contact with the EAP for comments for considerations on the Final Scoping Report and Draft EIR.</p> <p>The Draft Scoping Report was made available on the website of Emvelo Consultant (<a href="https://www.emveloconsultants.co.za/">https://www.emveloconsultants.co.za/</a>).</p>

## 11.5 Availability of EIA/EMPr

Notification regarding the availability of the EIA and the EMPr Report for public review was given in the same manner as for the Scoping Report above and the report made available for public review and comment for a period of 30 days from **22 July 2022** to **20 August 2022**.

## 11.6 Comments and Responses

Section 43 of Chapter 6 of NEMA (EIA Regulations 2014 as amended on 07 April 2017) indicates that all I&APs are entitled to comment in writing on all reports produced by the applicant during the EIA process. This will bring the concerns raised to the attention of the applicant. The comments in this EIA report are carried over from the initial Scoping Report. All comments are integrated and the EIA is set to address the previous comments raised. The comments response report is attached as (**Appendix E**).

The proof of document circulation to I&APs is attached as (**Appendix E**).

## 12 DESCRIPTION OF BASELINE ENVIRONMENT

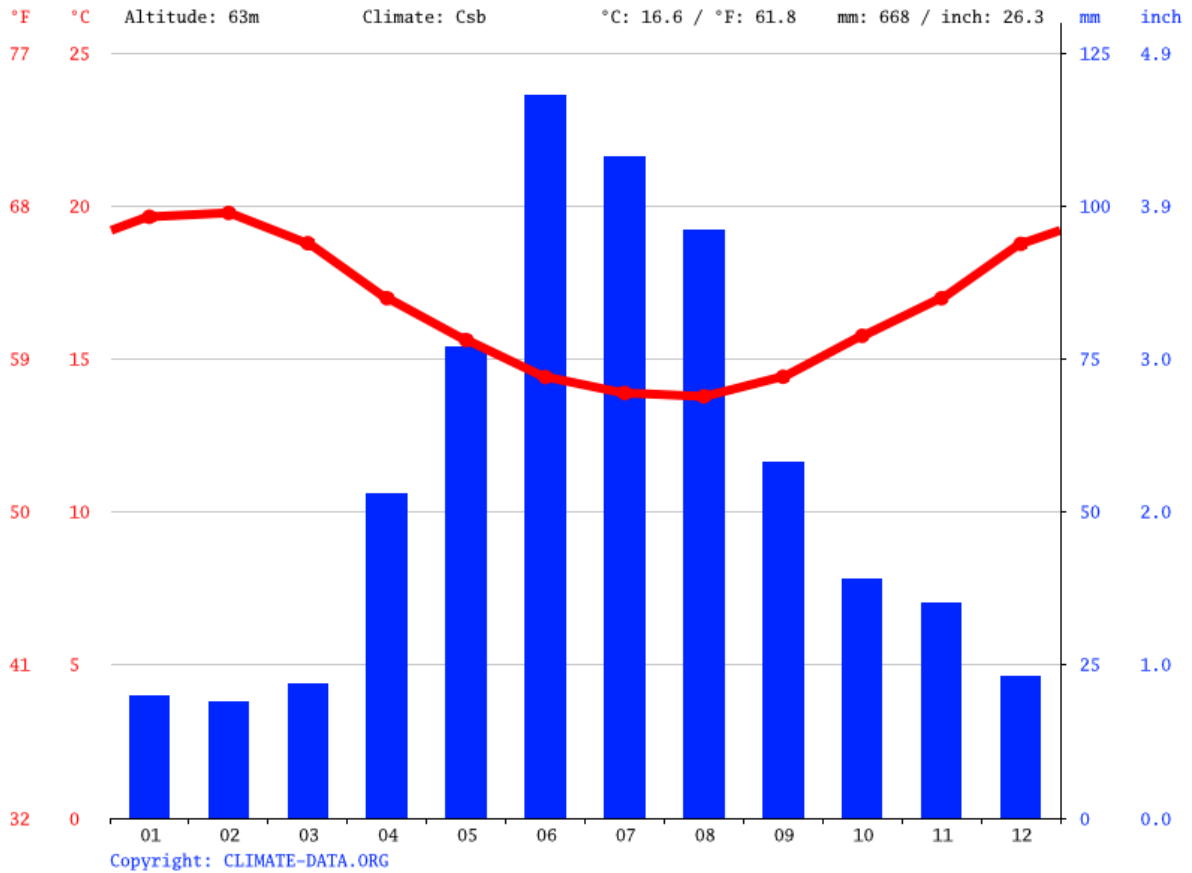
This section provides a general description of the status quo of the receiving environment in the project area. This serves to provide the context within which the EIA exercise was conducted. It also allows for an appreciation and identification of sensitive environmental features and possible receptors of the effects of the project.

### 12.1 Climate

The Southern African region is divided into three climatic regions: wet, dry, and moderate regions. The Western Cape encompasses both, with categories classified by the Köppen-Geiger system such as; warm-summer Mediterranean climate (*Csb*), cold semi-arid climates (*BSk*), oceanic climate (*Cfb*), hot-summer Mediterranean climate (*Csa*), hot semi-arid climates (*BSh*), humid subtropical climate (*Cfa*), cold desert climates (*BWk*), and hot desert climates (*BWh*). The region is mostly dominated by *Csb*, *BSk*, *Cfb*, and *Csa* (Climate-Data.org).

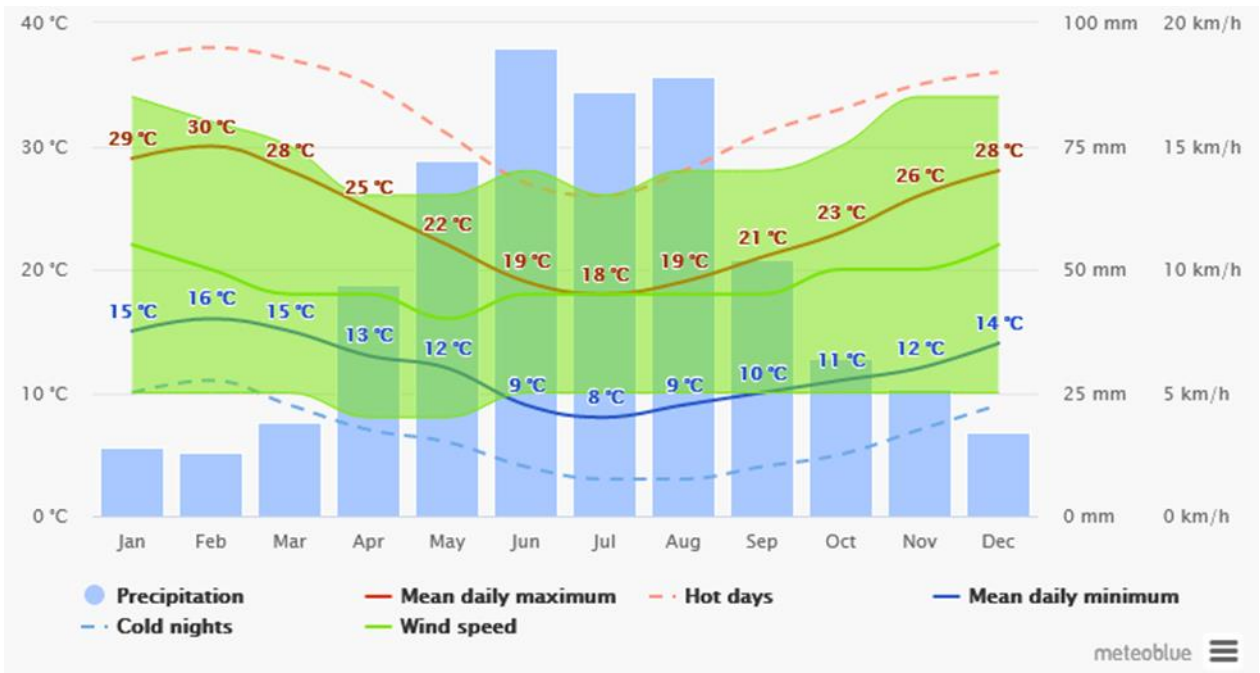
Simon's Town is characterised by warm and temperate weather. This region falls under the (*Csb*), with annual mean temperature of (16.6 °C), and the annual precipitation of 668 mm

which is mostly received during winter. During the same time of year, this area also records the highest humidity. Most of the precipitation falls in June, averaging 118 mm, while the driest period is experienced in February averaging 19 mm, with the lowest annual humidity (Climate-Data.Org).



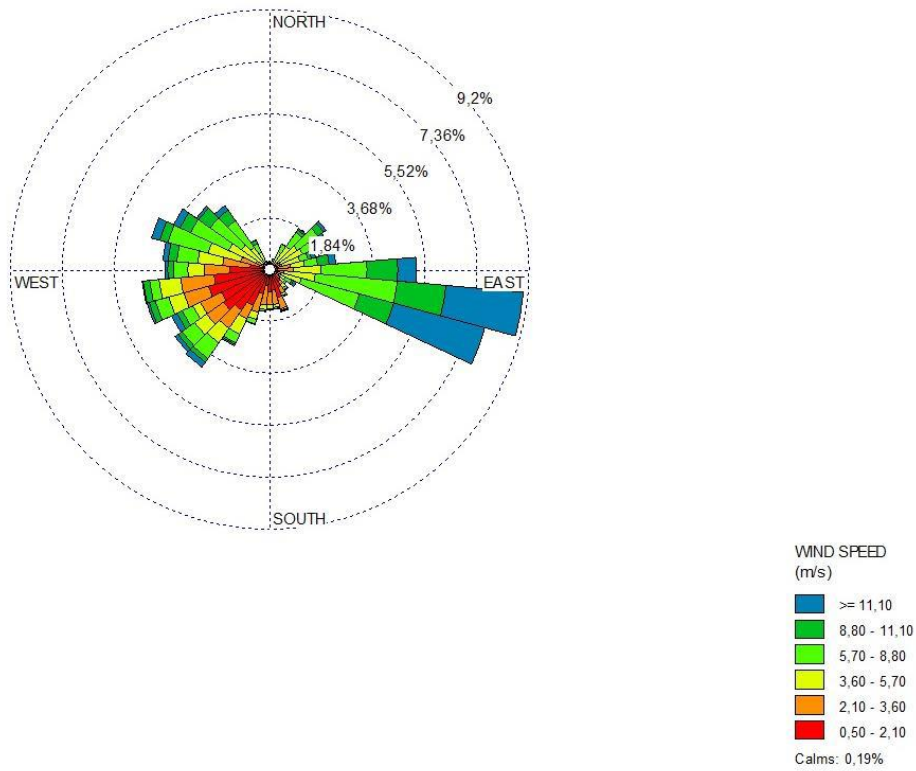
**Figure 6: Simon’s Town climate graph over a 12-month period [Source: Climate-Data.Org]**

Other factors to be taken into consideration is the prevailing wind direction and wind velocity within the study area. The Meteoblue climate diagram (**Figure 7**) below illustrates the mean wind velocities. The green shaded area displays a minimum and maximum mean monthly wind velocity. The graphical representation indicates that the monthly average maximum wind velocity of approximately 15km/h-17km/h is experienced during the summer season, mostly between October and March, while the wind speeds from April to September range between 13km/h to 14km/h.

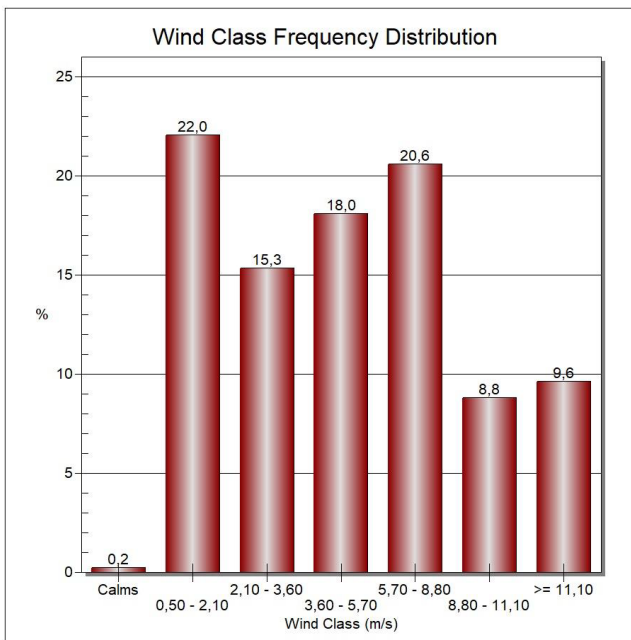


**Figure 7: Simon's Town mean wind velocity [ Source: Meteoblue Climate Graphs]**

The study area as provided by the Air Quality Impact Assessment, has the annual surface air conditions blowing predominantly from the South-Easterly (SE) direction and secondary winds blowing from the Westerly (W) direction. The annual wind speeds measure was in the range of 1.8 – 7.56 km/h. The figure (8 & 9) below illustrate the predominant wind direction, and average wind speed, respectively.



**Figure 8: Wind rose for study area**



**Figure 9: Average wind speed for study area**

### 12.1.1 Potential impact

During the operation of the foundry, dust and particulate matter are generated in each of the process steps with varying levels of mineral oxides, metals (mainly manganese and lead), and metal oxides. Additionally, dust is also created from:

- (a) thermal processes such as melting furnaces
- (b) and chemical/physical processes such as molding and core production
- (c) mechanical actions such as handling of raw materials, mainly sand, and shaking out and finishing processes.

The ADF contributes to the atmospheric emissions as a result of flue gases emitted from the chemical compounds used for the operation of the furnaces for melting of metal alloys. The local environment and atmosphere are the direct recipient of air pollution from the foundry's operation. The DFFE has published a list of activities which result in atmospheric emissions that require authorisation. The ADF is classified as 'Category 4, Sub-category 4.10' of NEM: AQA (Act No.39 of 2004), listed in GN 893 of November 22, 2013, as amended in June 2015. "Production and or casting of iron, iron ores, steel or ferro alloys, including the cleaning of castings and handling of casting mould materials."

It is therefore imperative that measures to regulate the foundry's activities that result in atmospheric emissions, be detailed in an EMPr and in the Air Quality Impact Assessment Report.

## 12.2 Hydrology

The hydrological system comprises an interlinked system of ecosystems such as the headwaters of a river catchment, rivers, and wetlands downstream, lakes, groundwater, estuaries, and the marine environment. The Western Cape's freshwater ecosystems comprise diverse rivers and wetlands, as discuss below (Pool-Stanvliet, Duffell-Canham, Pence, & Smart, 2017). The hydrological features at the project area are discussed in the following sub-sections.

### 12.2.1 Rivers and dams

The headwaters of the Western Cape are supported by mountain catchments, often associated with seeps and other wetland types. These river systems drain to the foothills, lowlands and plains, until they form estuaries and empty in both the Indian and Atlantic Oceans. The distribution of river system covers 10 different ecoregions, namely the Drought corridor, Southern Folded Mountains, South-eastern coastal belt, Great Karoo, Southern coastal belt, Western Folded Mountains, South-western coastal belt, Western coastal belt, Nama Karoo, and Namaqua highlands. These river systems are classified as a National Freshwater Ecosystem Priority Area (NFEPA) River (Pool-Stanvliet, Duffell-Canham, Pence, & Smart, 2017).

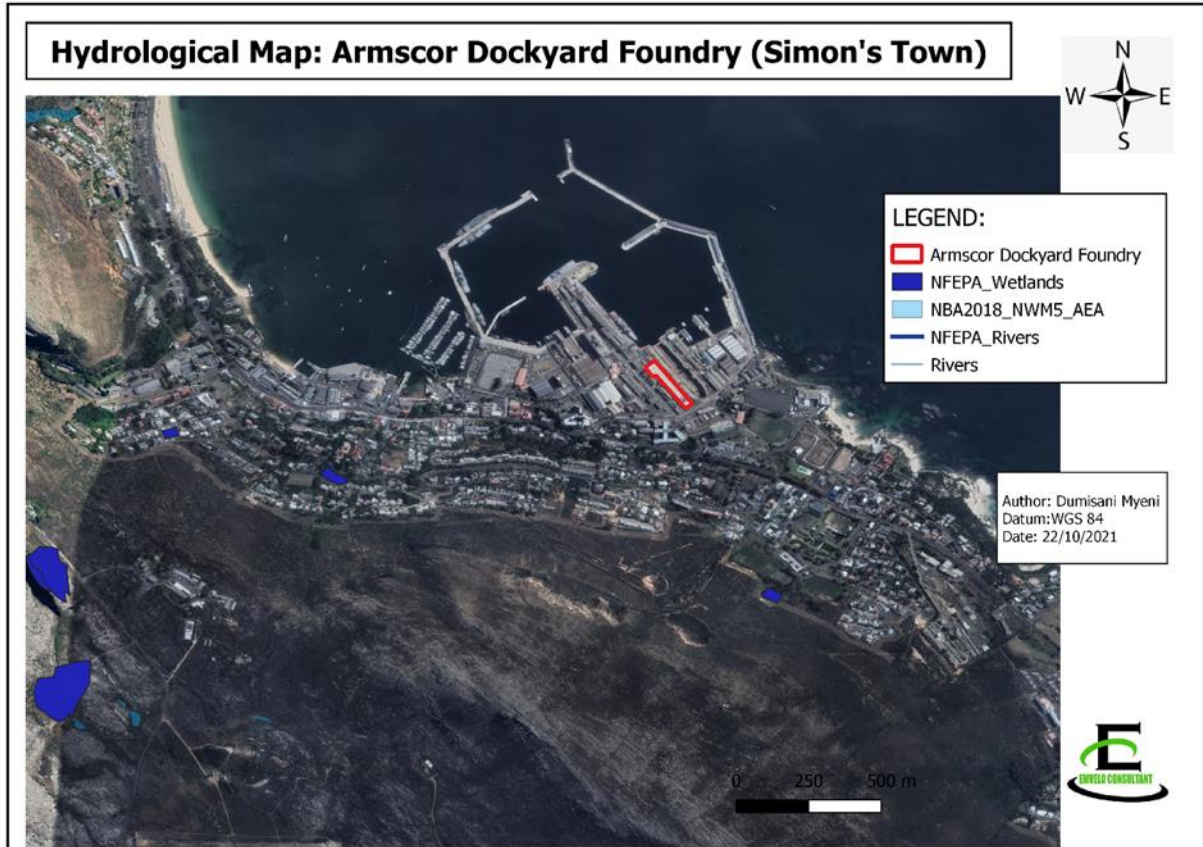
The foundry is located within the G22A Quaternary Catchments under the Berg-Olifants Water Management Area. However, there are no terrestrial water courses within a 500m Project Area of Influence (PAOI) of the foundry (**Figure 10**). Further analysis of the NFEPA and FEPA Rivers dataset confirms that no fish corridors or fish support areas or prioritised FEPA areas are located within the regulated area.

During the field assessment, a channel was observed, which could represent a small drainage line or watercourse. However, no water flow was observed. This potential drainage line is not associated with any significant flow and may simply be as a result of a geological fault line.

### 12.2.2 Wetlands

Wetlands are largely known for providing species habitat and ecosystem services. Within the regional context, there are number of wetlands located and differing along altitudinal zones, with diverse wetland categories, namely: plain, seeps, wilderness lakes, and vleis, etc. within Western Cape. The region is estimated to have approximately 300 000 ha of wetland overlay, which could be translated into 1% of provincial land cover. However, only 13% of these wetlands are still intact, with a further 34% being moderately modified and the remaining 53% found to be heavily to critically modified. (Pool-Stanvliet, et al., 2017).

Noticeable, there are numerous wetland and pans dispersed across the high altitudes of Simon's Town. However, these wetlands are not within 500m coverage of the ADF (**Figure 2 & 10**).



**Figure 10: Hydrological Map (Armscor Dockyard foundry)**

The field investigation observed the existence of a channel which could represent a small drainage line or watercourse, assumed be a geological fault line. However, no signs of surface water flow and no inundated grassland patches, or notable hydrophilic species were noted and this drainage line is unlikely to provide much heterogeneity.

### 12.2.3 Potential impacts of the project hydrological features

There is no direct impact on wetlands systems as the foundry is not in close proximity to any of these systems. The impacts could only be linked to faunal species, that may be affected due pollution dispersion as a result of foundry's emissions. Therefore, measures to regulate the foundry's activities that result in atmospheric emissions is described in EMPr and Air Quality Impact Assessment Report.



### 12.3 Ground Water Quality

There were no boreholes located at the foundry facility. Hence, there is a lack of information on the quality of the groundwater at the foundry. However, it is important to note that the ADF facility ground surface has a concrete floor, as the foundry is within the dockyard facility.

Factor for consideration, is that there are other workshops within the dockyard facility.

#### 12.3.1 Potential Impacts

Potential impacts on groundwater may arise if hazardous substances are allowed to leak onto bare soil and potentially leach into the ground. However, as the site is paved with concrete, it is unlikely that groundwater pollution may occur as a result of the current activities on site. Most areas where materials are stored are under roof and stored within lined and bunded facilities. Hence rainwater does not leach through or wash hazardous substances into clean water systems from these storage areas.

### 12.4 Biomes

The Western Cape hosts five distinct biomes of high levels of diversity and endemism. These biomes occupy a high proportion of South African biomes, namely; Fynbos (79%), Succulent Karoo (35%), Nama Karoo (11%), Albany Thicket (5%) and Afrotropical Forest (47%), which are classified as 'Critical Endangered'. There is also a small proportion of Grassland Biome (0.03%) which is situated along the plains (Mucina & Rutherford 2006, as *cited* in Pool-Stanvliet, *et al.* 2017).

The study area falls under the Fynbos Biome, with predominantly Peninsula Granite Fynbos and Peninsula Sandstone Fynbos (**Figure 11**).

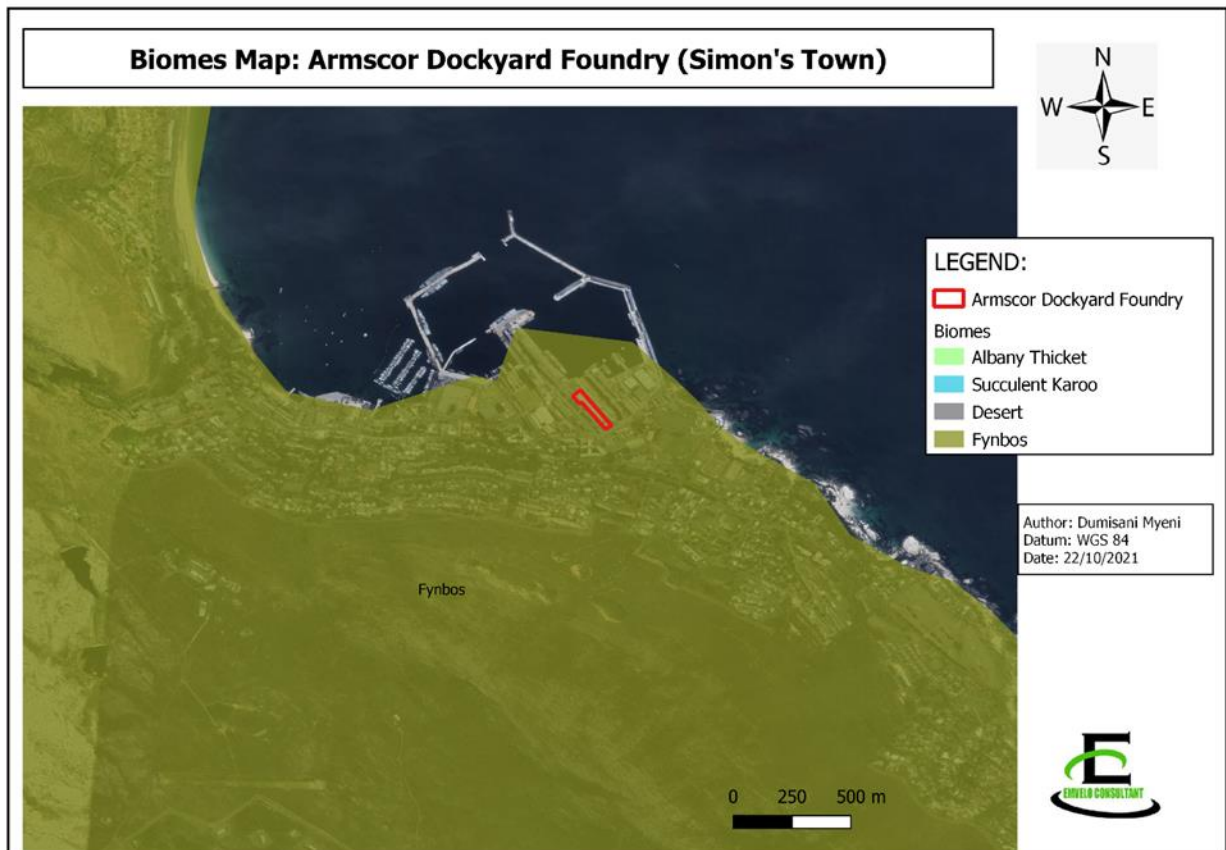
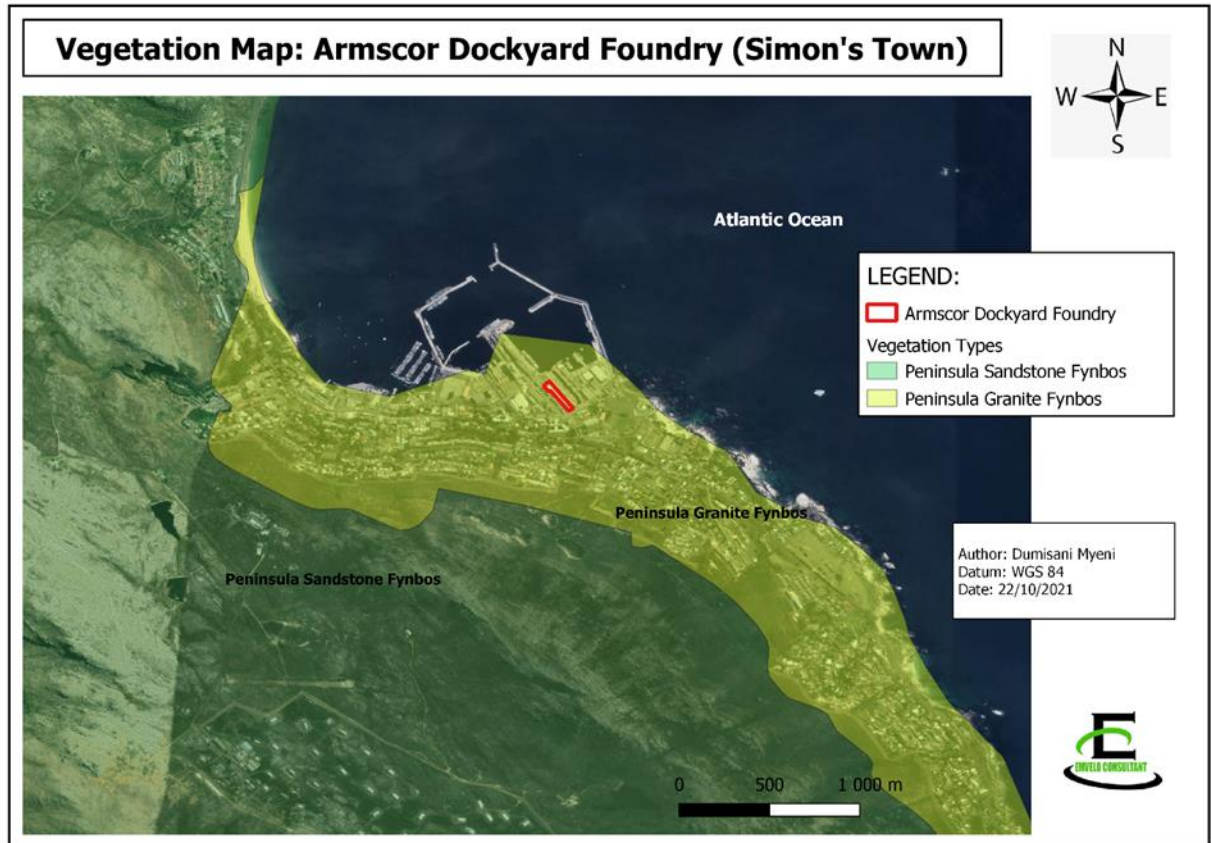


Figure 11: Map Showing the biome within a study area

## 12.5 Flora

As discussed in (**Section 12.3**), there are high levels of vegetation diversity and endemism within the Western Cape region which is underpinned by five distinct biomes. In addition, the Western Cape region is overlaid by 24 vegetation units with conservation status classified as 'Critically Endangered', 'Endangered', and 'Vulnerable' and a total of 67 with conservation status classified as 'Threatened' amongst which are the cape fynbos species, alluvial vegetation species, succulent species, and spekboomveld (Pool-Stanvliet, *et al.*, 2017).

The vegetation type with the study area (**Figure 12**) is predominantly Peninsula Granite Fynbos (*FFg3*) which is 'Critically Endangered' with a 30% conservation target, and a southern inland intrusion of Peninsula Sandstone Fynbos (*FFs9*) which is considered 'Endangered' with a 30% conservation target (Mucina & Rutherford, 2006).



**Figure 12: Map showing the dominant vegetation within study area**

The 500m Project Area of Influence (PAOI) was considered applicable to the nature and scale of the activities taking place within the ADF. A small portion (approximately 2.95 hectares) of natural habitat within the Peninsula Granite Fynbos (FFg3) boundary falls within the PAOI. The remaining areas are transformed and have been replaced by residential properties, roadways and other unnatural land uses.

The Peninsula Sandstone Fynbos (FFs9) is situated along the high altitude of the Cape Peninsula within protected areas outside of the PAOI (Table Mountain Protected Area) as discussed (in **Section 12.5**) below.

There were four (4) distinct habitats that were delineated during the site visit within the study area, namely Peninsula Granite Fynbos (natural habitat), ocean and coastal habitat (location of Simon's Town naval base), secondary habitat (fringe between residential areas and the

natural veld found to the south), and Settlement habitat (represents a portion of the study area within PAOI).

During the field assessment within the PAOI it was observed that vegetation communities with this area are devoid of any tree coverage and consist of dense *asteraceous* and *proteoid* type fynbos with few open patches, and limited alien encroachment. *Erica hiriflora* was notably more abundant among the rocky, yet open veld and become more disturbed and notably less diverse.

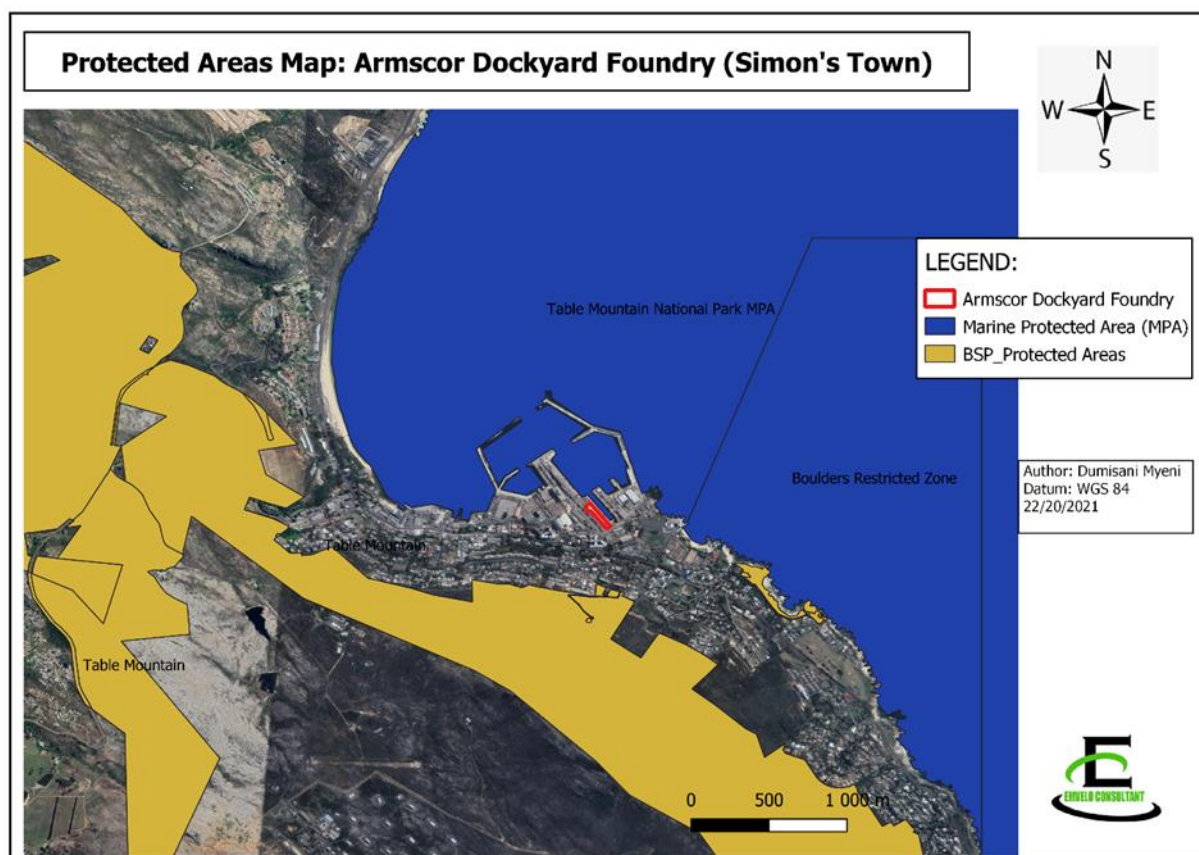
### 12.5.1 Potential Impacts

The ADF is already operational. The activity does not require any vegetation clearance. However, it is important to note that the neighbouring vegetated areas support species habitat. Therefore, the foundry is likely to have an indirect impact on the habitat from any pollutant dispersion. Measures to mitigate the foundry's activities that result in atmospheric emissions have been described in the EMP, Air Quality Impact Assessment Report, and Terrestrial Biodiversity Assessment Report.

## 12.6 Protected Areas

Protected areas in South Africa are defined as parts of the landscape that are formally protected by law in terms of the NEM: PAA and managed primarily for the purpose of biodiversity conservation. The Western Cape has a number of protected areas corresponding to high levels of species endemism. The Western Cape hosts several types of protected areas, namely Special Nature Reserves, National Parks, Nature Reserves, and Protected Environments, World Heritage Sites, Marine Protected Areas and Mountain Catchment Areas (MCAs). In addition, the whole of the Cape Peninsula, where the foundry is located is regarded as a Marine Protected Area (MPA) (Pool-Stanvliet, *et al.*, 2017).

The ADF is located approximately 1 km away from the MCA and is within a MPA. Technically, the site is between Table Mountain Protected Area which is a MCA and the Table Mountain National Park which is a combination of MCA and MPA and bordered with the Boulder Restricted Zone (MPA) on the east, on the shores of Atlantic Ocean. (**Figure 13**).



**Figure 13: Map showing Protected Areas within the study area**

According to the Air Quality Impact Assessment, the ADF pollutant dispersion is limited to the dockyard. Therefore, the protected areas such as the Table Mountain National Park (approx. 350m away), the Cape Floral Region Protected Areas (approx. 330m away) and the Cape Peninsula Nature Reserve (approx. 1 432m away) are least impacted by the foundry's operation in terms of ambient air pollution. The only protected area within the pollutant dispersion model is the MPA, the Table Mountain National Park (approx. 23m away).

The Western Cape Biodiversity Spatial Plan ("WCBSP") Handbook, (2017) described two main categories of areas that are required to meet conservation targets. These two main categories include Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs). The CBAs are crucial for supporting biodiversity features and ecosystem functioning and are required to meet or process biodiversity targets, including corridors. The ESAs represent the functionality and not necessarily the entire natural areas that are required to ensure the persistence and maintenance of biodiversity patterns and ecological processes within a CBA (**Refer to table 14**). However, in the Western Cape Province, about 80% of land that has important biodiversity

on it, do not fall within formally protected areas, but is privately or communally owned land (Pool-Stanvliet, *et al.*, 2017).

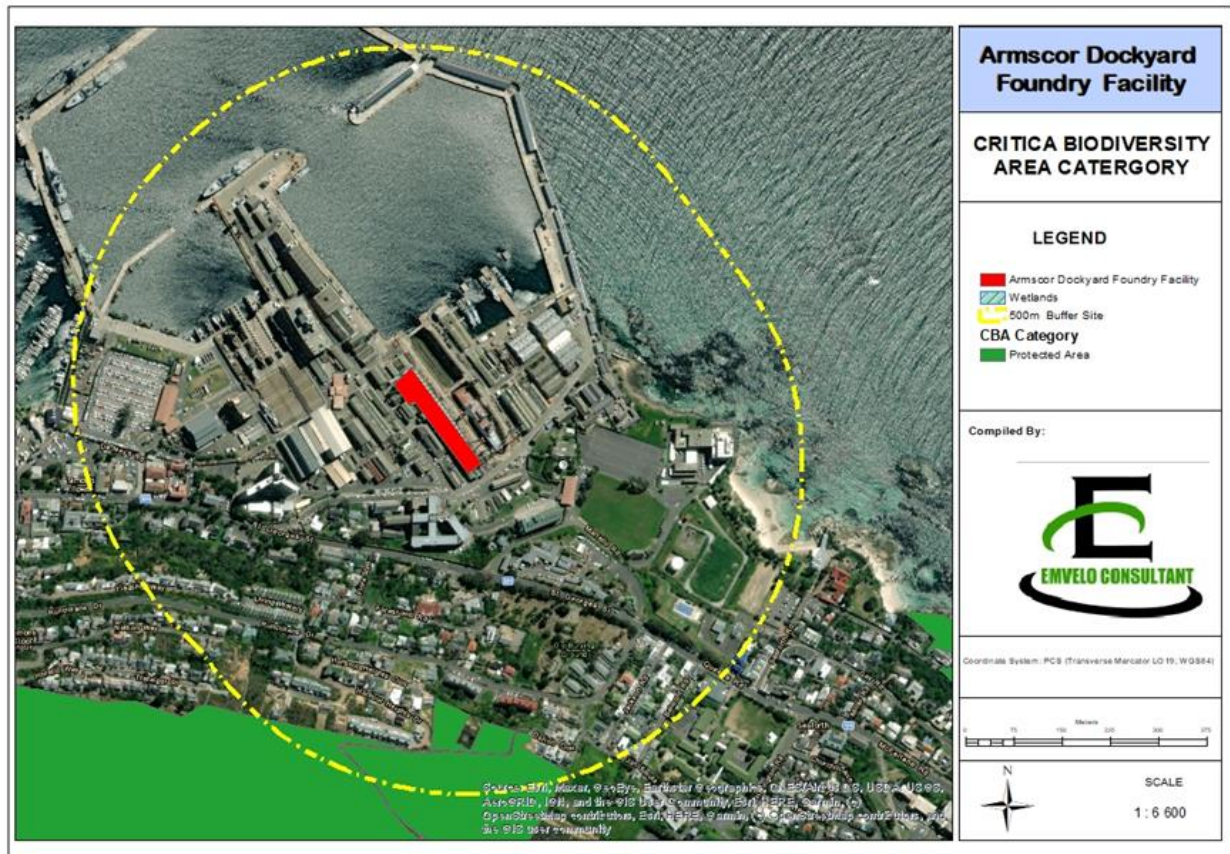
**Table 14: Subcategories of CBAs and ESAs [Source: WCBSP,2016]**

Critical Biodiversity Areas (CBAs) – Crucial for supporting biodiversity features and ecosystem functioning and are required to meet biodiversity and/or process targets		
Critical Biodiversity Areas: Irreplaceable (CBA1)		Areas considered critical for meeting biodiversity targets and thresholds, and which are required to ensure the persistence of viable populations of species and the functionality of ecosystems.
Critical Biodiversity Areas: Optimal (CBA2)		Areas that represent an optimised solution to meet the required biodiversity conservation targets while avoiding high-cost areas as much as possible (Category driven primarily by process but is informed by expert input).
Ecological Support Areas (ESAs) – Functional but not necessarily entirely natural areas that are required to ensure the persistence and maintenance of biodiversity patterns and ecological processes within CBAs.		
Ecological Support Areas		Functional but not necessarily entirely natural terrestrial or aquatic areas that are required to ensure the persistence and maintenance of biodiversity patterns and ecological processes within the CBAs. The area also contributes significantly to the maintenance of Ecosystem Services.
Ecological Support Areas: Species Specific		Terrestrial modified areas that provide a critical support function to a threatened or protected species, for example agricultural land or dams associated with nesting/roosting sites.
Ecological Support Areas: Buffers		Terrestrial areas identified as requiring land-use management guidance not necessarily due to biodiversity prioritisation, but in order to address other legislation/agreements which the biodiversity sector is mandated to address, e.g., WHS Convention, triggers Listing Notice criteria, etc.

There are a number of CBAs and ESA within the Cape Peninsula. However, an interrogation of the City of Cape Town: SANBI Biodiversity Network (2017) for terrestrial areas, indicates that the study area contains three (3) of the CBA categories, namely an ESA; Other Ecological Support Area (OESA) and Protected: In Perpetuity (**Figure 14**). These areas of conservational



importance areas form a small portion (approximately 2.95 hectares) of natural habitat falling within the Peninsula Granite Fynbos (FFg3) boundary remained and fell within the PAOI.



**Figure 14: Map showing CBAs within 500m coverage of the dockyard foundry**

The SCC are underpinned by ecological, economic, or cultural importance and include: those that are rare, endemic, or threatened; species with unusual distributions; and medicinal and other indigenous species that are exploited commercially or for traditional use (Pool-Stanvliet, *et al.* 2017). During the field assessment only one (1) plant species of conservation concern was observed within 500m PAOI, namely *Lampranthus filicaulis* species, with a conservation status classified as ‘vulnerable’, also noted as an endemic species to the Western Cape. No animal SCC was observed during the field investigation.

### 12.6.1 Potential Impacts

The ADF is already operational. The activity does not require any vegetation clearance. However, it is important to note that the neighbouring ESA and CBA areas support species habitat. Therefore, the foundry would have indirect impact to habitat within pollutant dispersion. Therefore, measures to regulate the foundry's activities that result in atmospheric emissions has been described in EMPr, Air Quality Impact Assessment Report, and Terrestrial Biodiversity Assessment Report.

## 12.7 Fauna

The Western Cape has 172 described mammal taxa (species and subspecies), with 19 amongst these species listed as 'Threatened', three are 'Critically Endangered', four are 'Endangered', 10 are 'Vulnerable', and 18 are 'Near Threatened'. The Western Cape is characterised by high species endemism. The regional extant taxa are endemic and amongst other 10 of those are near endemic taxa, as well as locally extinct in terms of South African Red Data Book, and as per regional assessment to Western Cape. The animal SCC are as follows: *Acomys subspinosus* (Cape spiny mouse), *Amblysomus corriae devilliersii* (Fynbos golden mole), *Bathyergus suillus* (Cape dune mole rat), *Cryptochloris zyli* (Van Zyl's golden mole), *Damaliscus pygargus* (Bontebok), *Dasymys capensis* (Cape water rat), *Hippotragus leucophaeus* (Blue antelope), *Myosorex longicaudatus boosmani* (Boosmansbos long-tailed forest shrew) *Tatera afra* (Cape gerbil). All which are present in the Western Cape region (Pool-Stanvliet, *et al.*, 2017).

The Terrestrial Biodiversity Impact Assessment identified the six mammal SCC in the area, but with low to medium likelihood of occurrence in close proximity to the foundry.

The Western Cape recorded approximately 600 bird species, with 48% territorial and (52% being migratory species, mostly resident south during the southern hemisphere summer. The region has 93 bird species which are listed as threatened and six of those are regionally extinct (Pool-Stanvliet, *et al.*, 2017).

The Western Cape also recorded approximately 153 reptile species, 14% which are endemic to the province. Eleven species are threatened: three Critically Endangered, two Endangered,



six 'Vulnerable'; and eight are 'Near Threatened', to which most are intolerant of habitat transformation (Pool-Stanvliet, *et al.*, 2017).

The invertebrates dominate the Cape Floristic Region. It is also noted that the invertebrates constitute more than 80% of all species diversity within the Western Cape. There are three species of dragonfly of SCC, two of which are considered 'Critically Endangered' and one 'Endangered'. There are 37 species of Lepidoptera (butterflies and moths) that are endemic to the Western Cape. However, the majority are of Least Concern, while one is extinct and two 'Critically Endangered' (Pool-Stanvliet, *et al.*, 2017).

The Cape Peninsula region was interrogated against Quarter Degree Square (3418AB), (**Figure 15**) obtained from the Fitzpatrick Institute of African Ornithology Virtual Museum (2019). The assessment indicates the presence of 108 mammal species, with two considered 'Vulnerable', namely: *Damaliscus pygargus pygargus* (Bontebok) and *Hippotragus niger niger* (sable antelope), and three are considered 'Near Threatened' namely: *Pelea capreolus* (Vaal Rhebok), *Aonyx capensis* (African Clawless Otter), and *Mirounga leonine* (Southern Elephant Seal).

The assessment within Quarter Degree Square (3418AB) also indicated a total of 167 bird species with one 'Near Threatened, namely: *Buteo trizonatus* (Forest Buzzard), four considered 'Endangered', namely: *Phalacrocorax africanus* (Reed/Long-tailed Cormorant), *Phalacrocorax neglectus* (Bank Cormorant), *Eudyptes moseleyi* (Northern Rockhopper Penguin), *Spheniscus demersus* (African Jackass Penguin), and *Scotopelia peli* (Pel's Fishing-Owl).

The assessment for Lepidoptera species within Quarter Degree Square (3418AB) recorded a total of 112 Lepidoptera species, with three of conservation concern, namely *Kedestes barberae bunta* (Cape flats freckled ranger) considered 'Critically Endangered', *Kedestes lenis lenis* (Unique ranger) considered 'Endangered', and *Aloeides egerides* (Red Hill russet) considered 'Vulnerable'.

The assessment for reptiles within Quarter Degree Square (3418AB) recorded 49 reptile species, with only six SCC, namely: *Bradypodion pumilum* (Cape Dwarf Chameleon), *Caretta caretta* (Loggerhead Turtle), and *Psammophis leightoni* (Cape Sand Snake) all considered 'Vulnerable', *Chelonia mydas* (Green Turtle) and *Cordylus niger* (Black Girdled Lizard) considered 'Near Threatened', and *Dermochelys coriacea* (Leatherback Turtle) considered 'Endangered'.

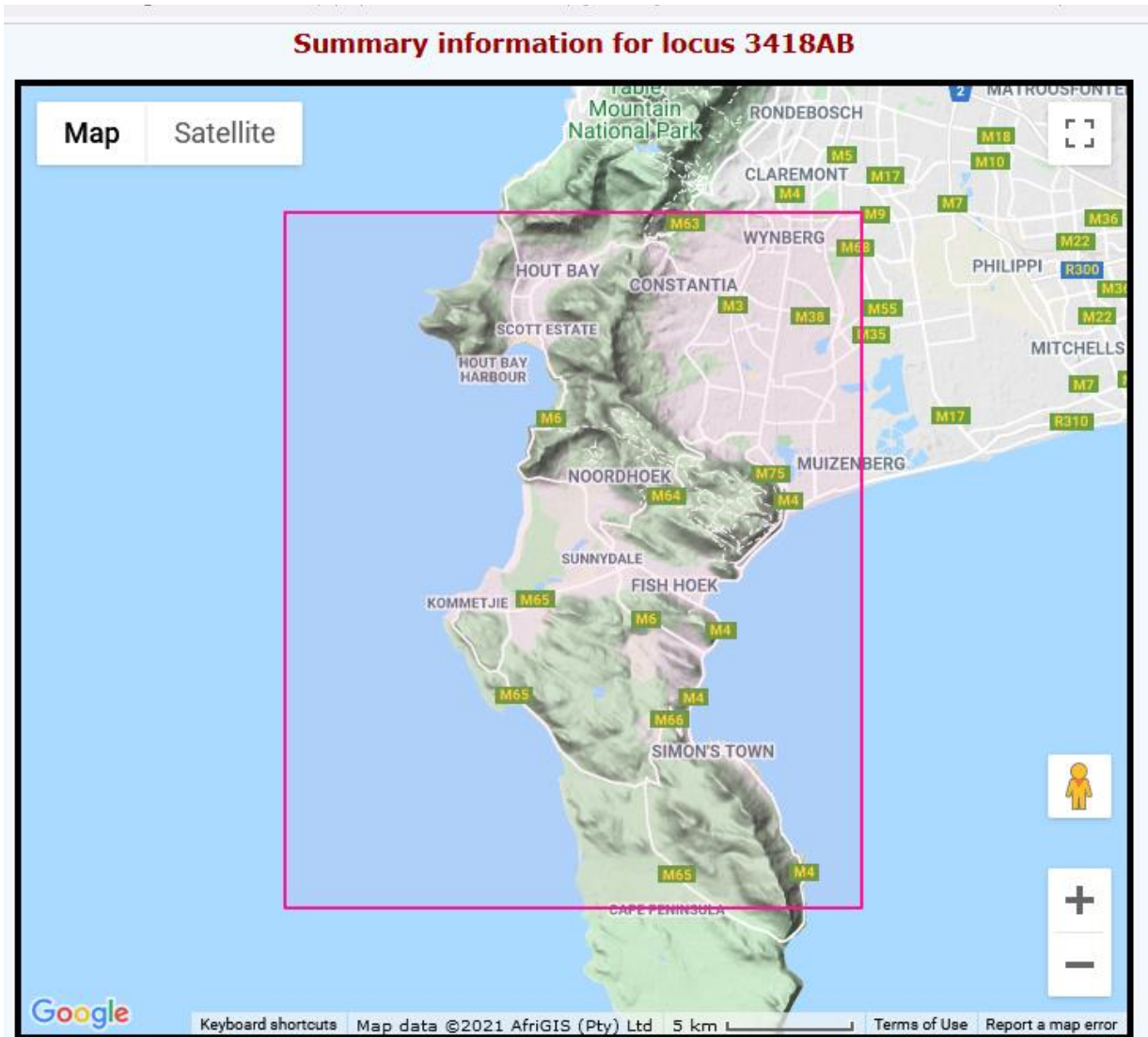


Figure 15: Locus 3418AB coverage [Source: DDI Virtual Museum (2019)]

The Terrestrial Biodiversity Impact Assessment identified eleven herpetofauna SCC in the area, with only four (Cape dwarf chameleon, Cape Mountain toad, loggerhead sea turtle and the Western leopard toad) having a high likelihood of occurrence.

The field assessment observed that the study area within a portion of natural habitat of PAOI is frequented by people walking with dogs and may have influenced the ability to view species naturally. The *common slender mongoose* was observed during the field investigation.

A number of bird species were observed along the ocean and coastal habitat. All observed species were noted to be of a common status and are unlikely to be affected by the continued operation of the foundry within the naval base. The common bird species observed during the assessment were *Red-winged starling*, *Rock kestrel*, *Great cormorant*, *Greater crested tern* and *Kelp gull*.

The Terrestrial Biodiversity Impact Assessment identified nine avifauna SCC in the area, with five (*Crowned Cormorant*, *Cape cormorant*, *bank cormorant*, *white-chinned petrel*, *brown skua*) having a high likelihood of occurrence.

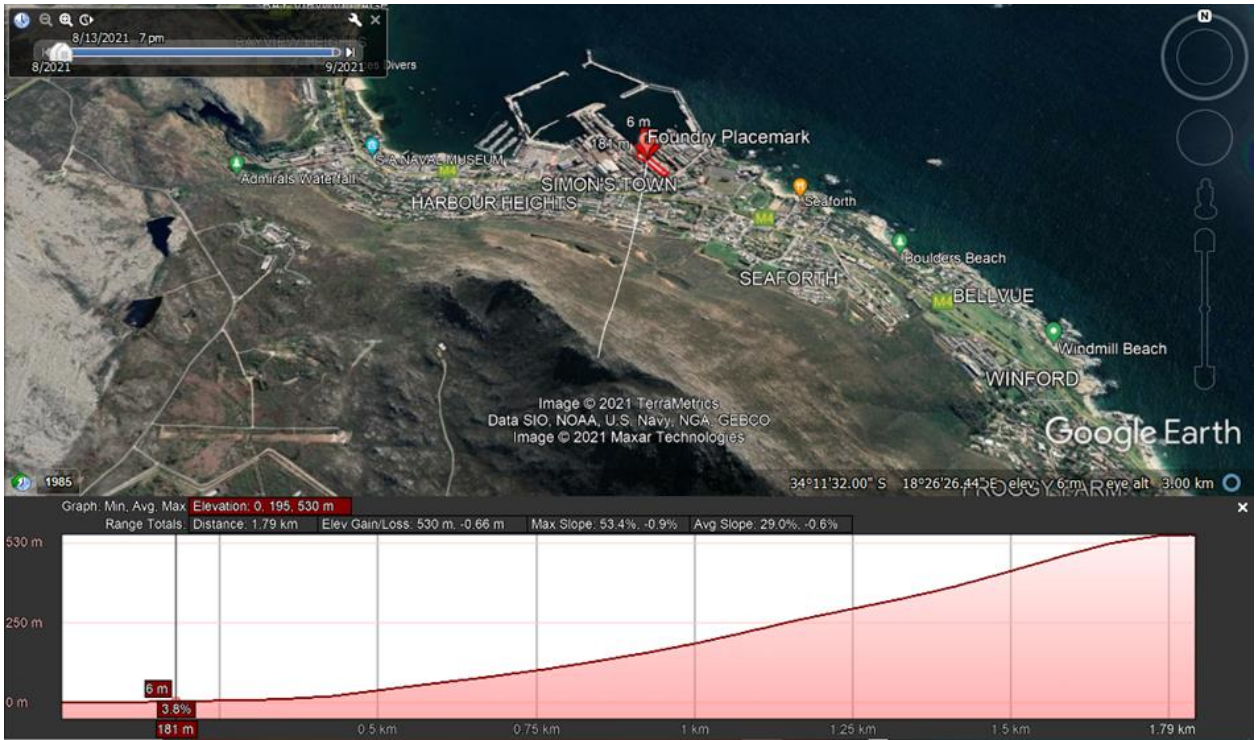
### 12.7.1 Potential Impacts

The ADF is already operational. The activity does not require any vegetation clearance and habitat destruction. However, it is important to note that the neighbouring ESA and CBA areas support species habitat. Therefore, the foundry would likely have indirect impact to habitat during pollutant dispersion incidents. Measures to regulate the foundry's activities that result in atmospheric emissions have been described in EMPr, Air Quality Impact Assessment Report, and Terrestrial Biodiversity Assessment Report.

## 12.8 Topography

Simon's Town is situated within the foothills of the Cape Peninsula on the western shores of False Bay. The foundry footprint is positioned within Simon's Town naval base. The topography therefore within the immediate footprint is flat and modified. The study area in Simon's Town is characterised of gently steep terrain, with slope gradient of approximately 17° (Average 29%) ranging from 0m to 546m above mean sea-level within a 2km distance. The ADF is approximately 6m above mean sea level on the shores of the Atlantic Ocean in False Bay (**Figure 16**).

The topography, characteristic of the study area comprises of a gentle steep terrain. The highest area for residential use is situated at 102m above mean sea-level at the foothill of the Cape Peninsula, and at southern part, approximately 1km away, from the foundry.



**Figure 16: Elevation within the study area (Simon's Town)**

### 12.8.1 Potential impacts

The residential areas within the pollutant dispersion model are most likely to be the area within the highest altitudes of the study area. Other factors such as the wind speed and direction must be taken into consideration when scheduling the foundry melting and casting processes, in order to prevent large scale dispersion in the direction of sensitive environments (such as residential and business areas as well as protected areas). The input from I&APs indicated that the foundry operations is likely to have least impact during prevailing westerly winds. Therefore, measures to regulate the foundry's activities on windy days that result in atmospheric emissions has been described in EMPr and Air Quality Impact Assessment Report.

## 12.9 Geology

The geological composition of the project locality is largely dominated by Granite geological formation (**Figure 17**). There will be no construction activities that will take place as the foundry is operational with supporting services already in place.

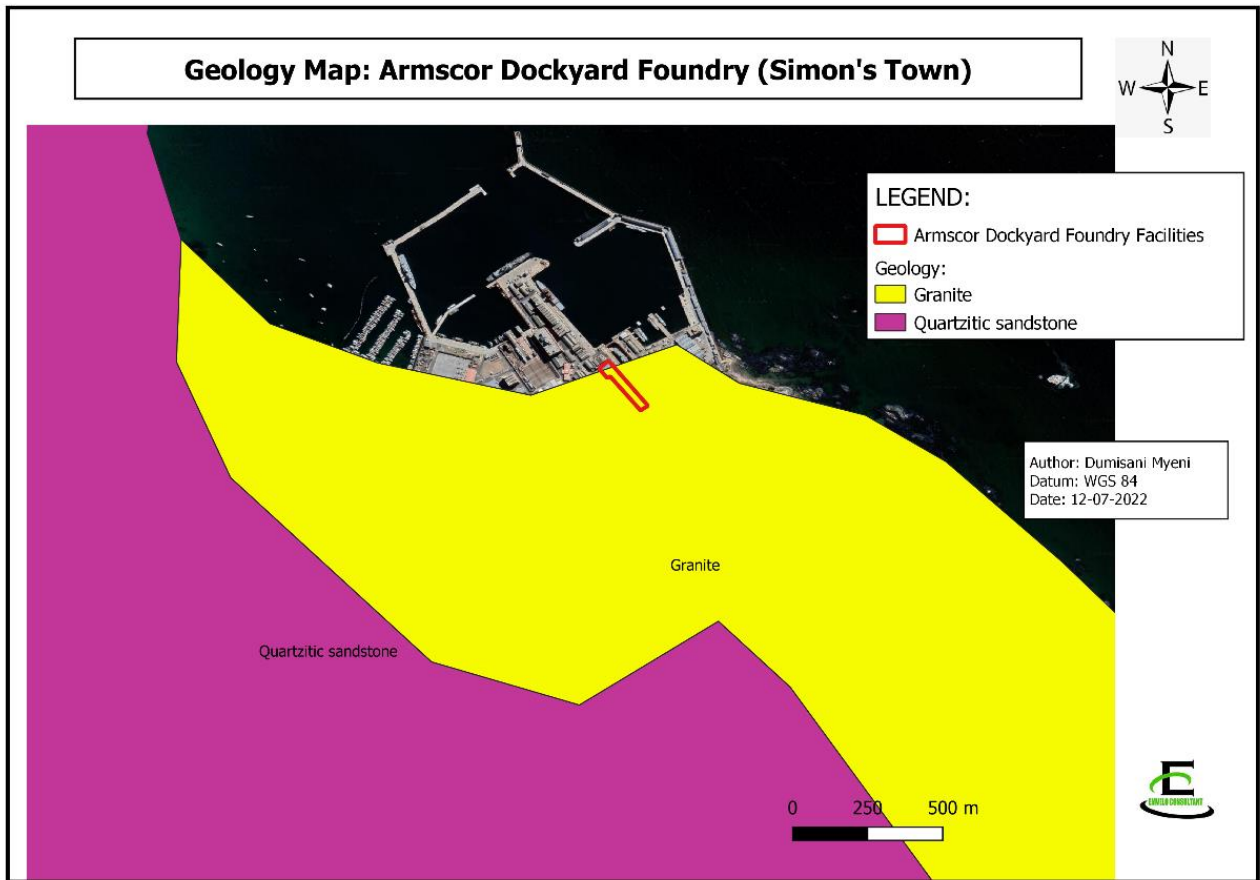


Figure 17: Map showing a dominance geological formation

### 12.9.1 Potential impacts

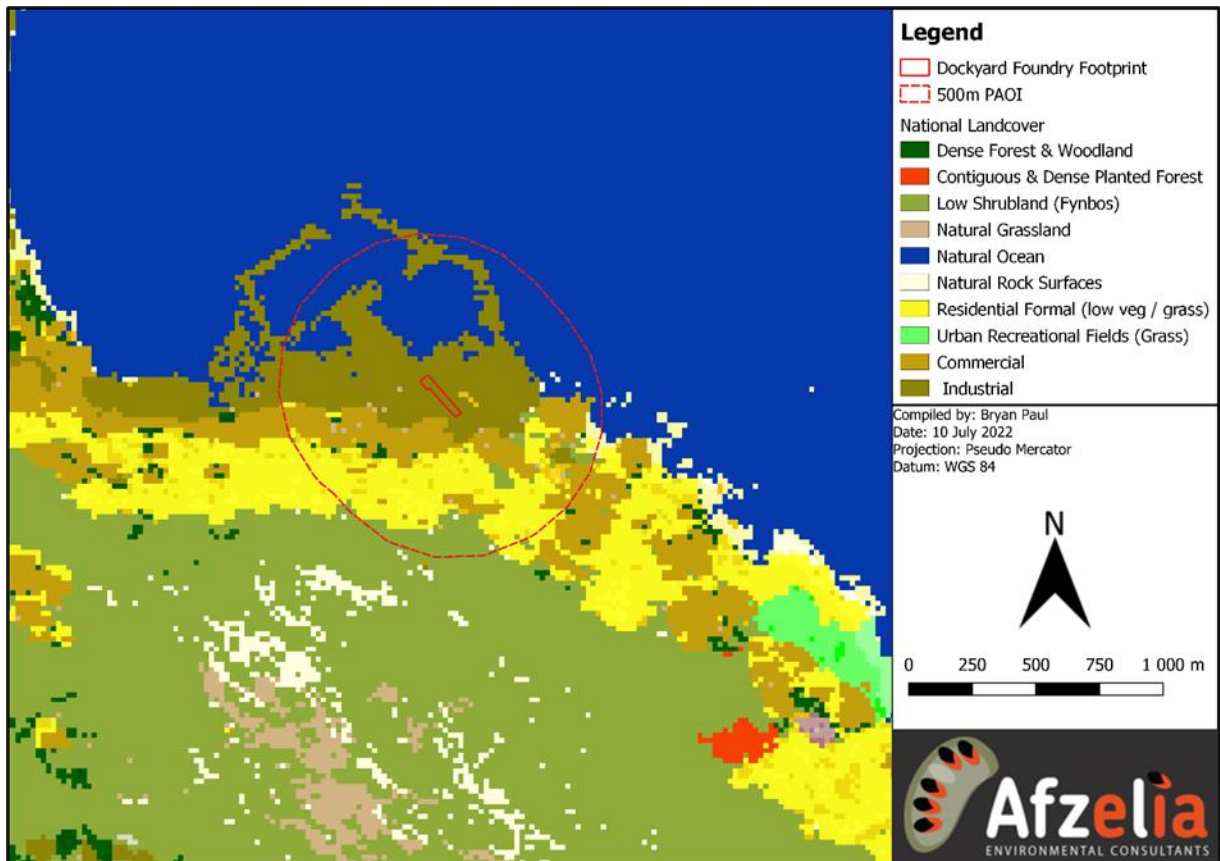
There are no impacts associated with the foundry with respect to geological degradation.

## 12.10 Visual environment and land use character

According to the National Landcover Dataset (DEA, 2020), the study area contains seven (7) key landcover classes (**Figure 18**). The following is a list of these classes according to the National Landcover Assessment (DEA, 2020): Dense Forest and Woodland; Low Shrubland



(Fynbos); Natural Ocean; Residential Formal (low veg/grass); Natural Rock Surfaces; Commercial; and Natural Grassland.



**Figure 18: National Landcover Map of the proposed development (DEA, 2020)**

Based on the observation made during the fieldwork, the current site conditions still align with the landcover assessment conducted by the DEA in 2020 and the landcover has largely remained unchanged over the past two years.

Subject to the direct visual influence of the foundry, the zone of visual influence can be experienced at different scales by receptors located at various distances from the site. The viewshed area and zone of visual influence for new developments is classified as follows:

- High visibility - Visible from a large area (several square kilometres, >5km radius)
- Moderate visibility - Visible from an intermediate area (several hectares, 2.5 – 5 km radius).

- Low visibility - Visible from a small area around the project site (<1km radius).

Pockets of land in Western Cape have undergone land cover change, due to economic activities, largely agriculture, urbanisation, and infrastructural developments. As a result, few remnants of natural vegetation remain within these areas which are of very high conservation value (Pool-Stanvliet, *et al.*, 2017).

The ADF is situated at the Simon's Town Naval Base, within which the natural environment is largely transformed, since the establishment of the Simon Town Naval Base with its rich history dating back to the 1890s, and currently modernised to meet operational capacity. This naval base is surrounded by residential areas and businesses within the foothill of Cape Peninsula.

The foundry, established in 1968, has been operational for more than five decades. The foundry is in line with local land use as the site is within a dockyard and associated workshop buildings. The entire site is walled, and the operations take place mostly within the warehouse infrastructure in the middle of the dockyard site. As a result, the foundry is not visible from outside the facility. Therefore, the viewshed area and zone of visual influence for the ADF's operation is considered "Low Visibility" or negligible as the site is streamlined to a built environment.

#### 12.10.1 Potential Impacts

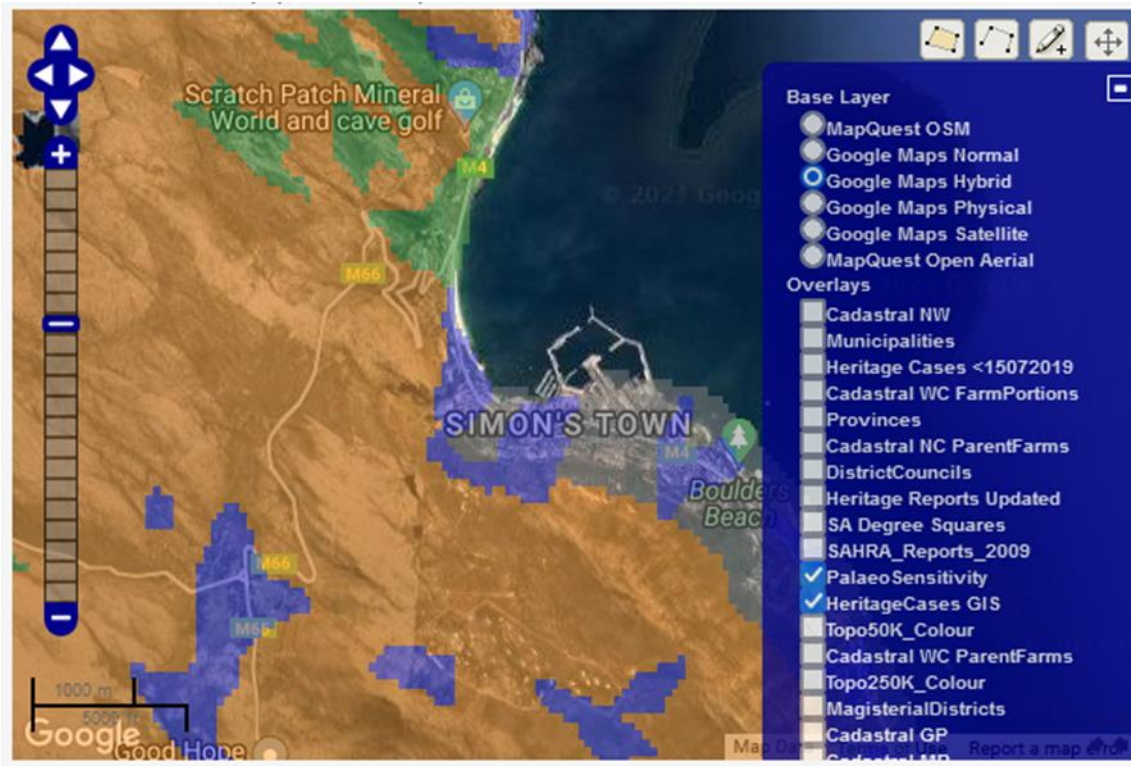
The viewshed area and zone of visual influence for the ADF's operation is considered "Low Visibility" or negligible as the site is streamlined to a built environment.

#### 12.11 Heritage and cultural aspects

The Simon's Town Naval Base has a rich intrinsic heritage dating back from the Dutch-East Indian Company settlements, and subsequently a British Royal Navy establishment of Simon's Town Dockyard. As a result, features within the Armscor Dockyard in Simon's Town are of heritage significance. The screening report indicated that the foundry is within 2km of a Grade II Heritage Site. However, it must also be noted that this EIA Application is for an existing foundry within Simon's Town Naval Base, which has been operational since 1968. No

upgrades and new development will take place and heritage resources will not be disturbed by the activities of the foundry.

A preliminary desktop study for palaeontological sensitivity of the naval base dockyard, reveals that the site falls within 'Low sensitivity' (**Figure 19**).



**Figure 19: Simon's Town Palaeontological Sensitivity**

[Source: SAHRIS <https://sahris.sahra.org.za/node/add/heritage-cases> ]

### 12.11.1 Potential Impacts

The project site has been operated as a foundry since 1968. Any impacts that may have been generated on cultural or historical sites cannot be mitigated at this late stage. Moreover, the foundry has blended into the cultural landscape, given its age. The activity on site will not be changing, as this is merely an application for licensing in accordance with the current environmental legislation. It is therefore unlikely that any artefacts of cultural or historical value remains on site or are likely to be disturbed with the continuing operation of the foundry.



There will be no filed assessment and protocol for finds for Palaeontological Assessment, as the site is classified as 'Low Sensitivity'. There is also no construction work that will take place, as the foundry is established and in operation since 1968.

### **12.12 Social and economic aspects**

Armcor (SOC) Ltd has made progress in transforming itself towards having a workforce that reflects the country's demographic profile. As a result, the Armcor Dockyard in Simon's Town, initiated a Talent Development Programme (TDP) to provide on-the-job training with mentorship to inexperienced (largely youth) and technical graduates. At the end of the learning contract, depending on the availability of posts, the said trainees are given permanent employment at Armcor.

In addition, the foundry offers job opportunities and forms part of the economic multiplier within Simon's Town, such as the buying of local services and goods for all those involved at the foundry. These local suppliers in turn develop the local economy. Hence the Amcor Dockyard forms part an integral part of the local economic development within the CTM.

The foundry metal casting process release the flue gases of chemical compounds, Therefore, the social impact (health and nuisance) as a result of ambient air quality and atmospheric emission cannot be overlooked. In this regard the public participation provided consensus inputs from the neighbouring community on how the foundry must manage and report the air quality impacts.

It must be noted that due to the nature of the activities at the ADF occupational and health risks such as physical hazards, heavy machinery hazards, radiation, fall from heights, respiratory hazards, electrical hazards, noise, burial hazards, motor vehicle accidents, fire and explosions are also present.

### 12.12.1 Potential Impacts

The ADF has social impact in terms of pollutant exposure during source-pathway-receptor (exposure pathways) from pollutants dispersion, as the environmental receptors (individual and population at risk) will be exposed to air pollution.

PM, SO<sub>2</sub> and NO<sub>x</sub> (NO<sub>2</sub>), lead, cadmium or sulphur oxides (SO<sub>x</sub>) are persistent in the environment and can be transported via ambient air. The uncontrolled emissions from the ADF would have social impact in terms of human health as a result of ambient air pollution from pollutant dispersion, as the environmental receptors (individual and population at risk) will be exposed to air pollution. The pollution can also pose a nuisance factor to local residents, visitors and road users.

## 13 WASTE AND AIR POLLUTION

The ADF, like other foundry operations, also emits to air pollution and generates large scale waste. These pollutants and waste have detrimental effect on the receiving environment.

### 13.1 Waste Management

Solid waste streams include sand waste, slag from desulfurization and from melting, dust collected within emissions control systems, refractory waste, and scrubber liquors and sludges.

The ADF generates waste in the form of scrap metal, grits, moulding sand, and health care (medical) waste (HCW) which emanates from medical treatment, or first aid rendered on site after an injury on duty.

The waste is temporary stored on an impervious surface and under a sheltered area within the foundry in three separate waste skips. General, hazardous and HCW are separated and are collected by a nominated certified waste service provider. The volume of waste that is temporarily stored currently does not exceed 100m<sup>3</sup> per month.

General/domestic waste is collected by the municipal service provider on a weekly basis.

### 13.1.1 Potential Impacts

The incorrect handling and disposal of hazardous waste could have detrimental impacts on nearby watercourses including the sea.

Potential impacts on groundwater may arise if hazardous substances are allowed to leak onto bare soil and potentially leach into the ground or disposed of incorrectly. However, as the site is concrete paved, it is unlikely that groundwater pollution will occur as a result of the current activities on site. All areas where materials are stored are under roof and stored on liquid tight (lined and bunded) facilities. It is therefore unlikely that the rainwater would runoff onto waste in storage and contaminate watercourses from these storage areas.

Proper measures will be put in place to contain any spillages (hazardous substances) and handling of waste emanating from the foundry, as prescribed by EMPr.

### 13.2 Air pollution

The ADF contributes to atmospheric emissions as a result of flue gases of chemical compounds (pollutants) emitted during operation of the furnaces for melting of metal alloys that are formed during the operation. The local environment and atmosphere are the direct recipient of air pollution from the foundry's operation. The DFFE has published a list of activities which result in atmospheric emissions that require authorisation. ADF is classified as 'Category 4, Sub-category 4.10' of NEM: AQA (Act No.39 of 2004), listed in GN 893 of November 22, 2013, as amended in June 2015. "Production and or casting of iron, iron ores, steel or ferro alloys, including the cleaning of castings and handling of casting mould materials."

Emissions from the ADF comprise of aluminum, copper, lead and zinc base alloy metal castings production emissions. The most significant ducted source emissions are from metal melting, which consist of PM, SO<sub>2</sub> and NO<sub>x</sub> (NO<sub>2</sub>) primarily. In addition, furnaces may be sources of lead, cadmium or sulphur oxide (SO<sub>x</sub>) emissions, depending on the type of fuel used to fire the furnace.

### 13.2.1 Potential Impacts

The ADF has direct impact terms of pollutant exposure during source-pathway-receptor (exposure pathways) from pollutants dispersion, as the environmental receptors (individual and population at risk) will be exposed to air pollution. In addition, the PM, SO<sub>2</sub> and NO<sub>x</sub> (NO<sub>2</sub>), lead, cadmium or sulphur oxides (SO<sub>x</sub>) are greenhouse gases (GHGs). Therefore, the high concentration level of these pollutants in atmosphere contribute to concentration of increased levels of GHGs, causing global warming which results in catastrophic climate change. Measures to regulate the foundry's activities that result in atmospheric emissions has been described in EMP<sub>r</sub> and Air Quality Impact Assessment Report.

### 13.3 Wastewater

The most significant use of water in ADF is for the cooling systems of electric furnaces (induction or arc) and in wet dedusting systems. Use of wet dedusting techniques may increase water use and consequent disposal management.

#### 13.3.1 Potential Impacts

In core making, where scrubbers are used, the scrubbing solutions from cold-box and hot-box core-making contain biodegradable amines and phenols.

Wastewater seeping into stormwater drainage systems will contaminate watercourses. Any wastewater discharged into the environment will negatively impact soils, flora and fauna of the area.

### 13.4 Noise management

At the ADF, noise is created from various sources, including scrap handling, furnace charging and melting, fuel burners, shakeout and mould/core shooting, and transportation and ventilation systems.

The ADF is within the Simon's Town Naval Base. The entire study area emits different levels of noise due to the various workshops occupying the dockyard. In addition, sources of noise

in the general surrounding area include noise generated by traffic utilising all the streets adjacent to the site, as well as all naval related activities at the dockyard.

#### 13.4.1 Potential Impacts

The noise generated by the operations and activities of the foundry are significantly muffled due to most other activities taking place within the dockyard workshops. Additionally, it is not likely that the foundry noise levels will exceed the ambient noise levels given all the other noisy activities in the area. Proper measures will be described in the EMPr to contain any potential noise pollution impacts that may occur.

### 14 IMPACT ASSESSMENT AND MITIGATION MEASURES

The EIA conducted for the operational phase of the foundry, are discussed in (**Section 14.1**) below.

Each impact identified is assessed in terms of probability (likelihood of occurring), scale (spatial scale), magnitude (severity) and duration (temporal scale). To effectively implement the adopted scientific approach in determining the significance of the environmental impact, a numerical value was linked to each rating scale.

The following criteria will be applied to the impact assessment for the operation of the foundry:

#### Occurrence

- ✚ Probability - the probability of the impact describes the likelihood of the impact actually occurring.
- ✚ Impact duration - the duration of the impact describes the period of time during which an environmental system or component is changed by the impact.

#### Severity

- ✚ Magnitude – refers to the ‘degree of disturbance’ to biophysical systems and components which expresses the change in the health, functioning and/or role of the system or component as a result of an activity.

- ✚ Scale/extent - the extent of the impact generally expresses the spatial influence of the effects produced by a disturbance to an environmental system or component.

The following ranking scales were used:

<p><i>Probability = P</i></p> <p>5 – Definite (More than 80 % chance of occurrence)</p> <p>4 – Probable (Between 60-80% chance of occurrence)</p> <p>3 – Possible (Between 40-60% chance of occurrence)</p> <p>2 – Fairly Unlikely (Between 20-40% chance of occurrence)</p> <p>1 – Unlikely (Less than 20% chance of occurrence)</p>	<p><i>Duration = D</i></p> <p>5 – Permanent - The only class of impact that will be non-transitory (indefinite)</p> <p>4 - Long-term - The impact and its effects will continue or last for the entire operational life of the development (15 - 50years)</p> <p>3 - Medium-term - The impact and its effects will continue or last for some time after the construction phase (5 - 15 years)</p> <p>2 – Medium-short - The impact and its effects will continue or last for the period of a relatively long construction period and/or limited recovery time after this construction period (2 - 5 years)</p> <p>1 – Short Term - Likely to disappear with mitigation measures or through natural processes which span shorter than the construction phase (0-2 years)</p>
<p><i>Scale = S</i></p> <p>5 – International (beyond 200km)</p> <p>4 – Regional (50-200km radius)</p> <p>3 – Local (2-50km radius)</p> <p>2 – Surrounding area (within 2km)</p> <p>1 – Site (within 100m)</p>	<p><i>Magnitude = M</i></p> <p>5 - High</p> <p>4– Medium High</p> <p>3 – Medium</p> <p>2 – Medium Low</p> <p>1 – Low</p>

*Status of Impact*

+ Positive / -Negative or 0-Neutral

The overall impact significance score/points (SP) for each identified impact are calculated by multiplying magnitude, duration, and scale by the probability of all this happening.

The range of possible significance scores is classified into seven rating classes (**Refer to section 14.1**).

$$SP = (\text{Magnitude} + \text{Duration} + \text{Scale}) \times \text{Probability}$$

The impacts status can either be positive, negative or neutral as depicted in table below.

Significance	Environmental Significance Points	Colour Code
Negligible	0-10	N
Very low	11-20	VL
Low	21-30	L
Medium	31-40	M
Medium-High	41-50	MH
High	51-60	H
Very high	61-75	VH

The impact assessment and mitigation measures outlined (in **Section 14.1**) below are based on preferred alternatives, namely: The '*Alternative A: Demand Alternative*', the '*Alternative B: Scheduling Alternative*', the '*Alternative C: Design & Technology Alternative*'.

The assessment covers the operational phase and maintenance/equipment decommissioning as the ADF is already operation, and no upgrades are likely to take place in the foreseeable future.

## 14.1 Impact Analysis (Demand, Scheduling, and Design/Technology Alternatives)

Table 15: Impact Assessment for ADF Operational Phase

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
<b>ADF Operational Phase</b>			
<p><b>Atmospheric emission resulting from uncontrolled fine stack emitted Particulate Matter (PM), as regulated under Section 21 of the Air Quality Act Category 4, Sub-Category 4.10: Foundries:</b></p> <p>The results of Air Quality Impact Assessment showed very little to no major impacts on the surrounding air quality with a 10 km radius, as operations contribute at maximum of 0.019% towards the NAAQS limits which is 75 µg/m<sup>3</sup> to within 100m from centre of operation at maximum emissions at the site.</p> <p>All the modelling results revealed that no exceedances of ambient standards occurred under any conditions. Sensitive receptors and residential areas near the plant concentrations for all pollutants showed to be less than 10% of National Ambient Air Quality Standards for all pollutants.</p>	<p><b>Medium-High (44)</b></p> <p><b>SP= (M + D + S) × P</b>  <b>SP= (4 + 4 + 3) × 4</b>  <b>SP =44</b></p>	<ul style="list-style-type: none"> <li>➤ As far as reasonably practicable, Best Available Technology (BAT) must be utilised in terms of abatement control equipment which are used to effectively reduce emissions.</li> <li>➤ Ensure that abatement control equipment is regularly maintained, serviced and repaired in accordance with manufacturers specifications.</li> <li>➤ Isokinetic stack emission monitoring must be conducted bi-annually or earlier at the discretion of the CA. Results must be reported to the competent authority (CA) to ensure that pollutant levels are monitored and are within the set regulatory limits.</li> <li>➤ ECO must be appointed to oversee activities of the foundry in line with AEL conditions, on annual basis. All non-conformance to AEL, EA and EMP<sub>r</sub> conditions must be reported within 24 hours to the CA.</li> </ul>	<p><b>Very-Low (12)</b></p> <p><b>SP= (M + D + S) × P</b>  <b>SP= (2+ 1 + 3) × 2</b>  <b>SP =12</b></p>



Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
<b>ADF Operational Phase</b>			
<p>However, it must be noted that uncontrolled emissions of PM with aerodynamic diameter less than 10 microns (PM<sub>10</sub>), Sulphur Dioxide (SO<sub>2</sub>) and Oxides of Nitrogen (NO<sub>x</sub>) as Nitrogen Dioxide (NO<sub>2</sub>) are the pollutants of significance when it comes to this process as regulated under Section 21 of the Air Quality Act Category 4, Sub-Category 4.10: Foundries.</p>			
<p><b>Uncontrolled atmospheric emission of flue gases from the five furnaces may lead to high concentrations of PM discharged into the atmosphere and ambient air:</b></p> <p>The ADF results of the Air Quality Impact Assessment showed very little to no major impacts on the surrounding air quality with a 10 km radius, as operations contribute at maximum of 0.019% towards the NAAQS limits which is 75 µg/m<sup>3</sup> to within 100m from centre of operation at maximum emissions at the site.</p> <p>All the modelling results revealed that no exceedances of ambient standards occurred under</p>	<p style="text-align: center;"><b>Medium-High (44)</b></p> <p style="text-align: center;"><b>SP= (M + D + S) × P</b> <b>SP= (4 + 4 + 3) × 4</b> <b>SP =44</b></p>	<ul style="list-style-type: none"> <li>➤ As far as reasonably practicable, BAT must be utilised in terms of abatement control equipment which are used to effectively reduce emissions.</li> <li>➤ Ensure that abatement control equipment is regularly maintained, serviced and repaired in accordance with manufacturers specifications.</li> <li>➤ Isokinetic stack emission monitoring must be conducted bi-annually or earlier at the discretion of the CA. Result must be reported to the CA to ensure that pollutant levels are monitored and are within the set regulatory limits.</li> </ul>	<p style="text-align: center;"><b>Very-Low (12)</b></p> <p style="text-align: center;"><b>SP= (M + D + S) × P</b> <b>SP= (2+ 1 + 3) × 2</b> <b>SP =12</b></p>

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
<b>ADF Operational Phase</b>			
<p>any conditions. Sensitive receptors and residential areas near the foundry for all pollutants showed to be less than 10% of NAAQS for all pollutants.</p> <p>However, it must be noted that uncontrolled emissions from furnaces include PM and PM<sub>10</sub>, as well as typical combustion products including CO, CO<sub>2</sub>, SO<sub>2</sub> and NO<sub>x</sub>. In addition, furnaces may be sources of lead, cadmium or Sulphur Oxide (SO<sub>x</sub>) emissions, depending on the type of fuel used to fire the furnace.</p>		<ul style="list-style-type: none"> <li>➤ The Operational Management Plan used for this facility must be updated include all addition regulatory actions, findings and control regimes recommended in the AEL.</li> <li>➤ All non-conformance to AEL, EA and EMP conditions must be reported within 24 hours to the CA</li> </ul>	
<p><b>Uncontrolled foundry operation will result in ambient air pollution from pollutant dispersion:</b></p> <p>The ADF results of the Air Quality Impact Assessment showed very little to no major impacts on the surrounding air quality with a 10 km radius, as operations contribute at maximum of 0.019% towards the NAAQS limits which is 75 µg/m<sup>3</sup> to within 100m from centre of operation at maximum emissions at the site.</p> <p>The he modelling results also revealed that no exceedances of ambient standards occurred under any conditions. Sensitive receptors and residential</p>	<p style="text-align: center;"><b>Medium-High (44)</b></p> <p style="text-align: center;"><b>SP= (M + D + S) × P</b> <b>SP= (5+ 4 + 2) × 4</b> <b>SP = 44</b></p>	<ul style="list-style-type: none"> <li>➤ The flue gases, emanating from melting metal base alloys and casting process, to be removed by extraction fans and discharged into the atmosphere via stacks.</li> <li>➤ The furnaces and metal must be scheduled to operate during westerly wind conditions.</li> <li>➤ As far as reasonably practicable, BAT must be utilised in terms of abatement control equipment which are used to effectively reduce emissions.</li> <li>➤ Ensure that abatement control equipment is regularly maintained, serviced and repaired</li> </ul>	<p style="text-align: center;"><b>Negligible (8)</b></p> <p style="text-align: center;"><b>SP= (M + D + S) × P</b> <b>SP= (1+ 1 + 2) × 2</b> <b>SP = 8</b></p>

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
<b>ADF Operational Phase</b>			
<p>areas near the plant concentrations for all pollutants showed to be less than 10% of NAAQS for all pollutants,</p> <p>However, it must be noted that uncontrolled emissions will impact environmental receptors (Individual and population at risk) from pollutant dispersion. Emissions from the ADF comprise of aluminium, copper, lead and zinc base alloy metal castings. The most significant ducted source emissions will be from metal melting, which consist of PM, SO<sub>2</sub> and NO<sub>x</sub> (NO<sub>2</sub>) primarily. In addition, furnaces may be sources of lead, cadmium or Sulphur Oxide (SO<sub>x</sub>) emissions, depending on the type of fuel used to fire the furnace.</p>		<p>in accordance with manufacturers specifications.</p> <ul style="list-style-type: none"> <li>➤ Conduct efficiency and stack emissions testing in accordance to schedules to ensure that pollutant levels are monitored and are within the set regulatory limits.</li> <li>➤ An environmental incidents register must be compiled, and updated whenever any incident is observed or reported by any stakeholder. The nature of the incident, date and contact details of the reporter must be recorded (with their permission).</li> <li>➤ All non-conformance to AEL, EA and EMP conditions must be reported within 24 hours to the CA.</li> </ul>	
<p><b>Ambient Air Pollution as a result of dust</b></p> <p>Dust could be generated during the operation of foundry as spills from moulds and fine product storage. The major dust sources could emanate from the spills from the moulds, pressure polishing of castings, sweepings within the foundry facilities and improper waste storage. Furthermore,</p>	<p style="text-align: center;"><b>Medium-High (44)</b></p> <p style="text-align: center;"><b>SP= (M + D + S) × P</b> <b>SP= (5 + 4 + 2) × 4</b> <b>SP = 44</b></p>	<ul style="list-style-type: none"> <li>➤ The facility must be swept and cleaned regularly to prevent accumulation of dust from the foundry operations and soils brought by vehicles.</li> <li>➤ All transported and stored fine product must be covered to prevent spills and being blown by wind.</li> </ul>	<p style="text-align: center;"><b>Negligible (8)</b></p> <p style="text-align: center;"><b>SP= (M + D + S) × P</b> <b>SP= (2 + 1 + 1) × 2</b></p>

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
<b>ADF Operational Phase</b>			
transportation and storage of fine used silica sand moulds (spoils), could result in dust.		<ul style="list-style-type: none"> <li>➤ All fine products must be covered during transportation.</li> <li>➤ An environmental incidents register must be compiled, and updated whenever any incident is observed or reported by any stakeholder. The nature of the incident, date and contact details of the reporter must be recorded (with their permission).</li> <li>➤ All non-conformance to AEL, EA and EMP conditions must be reported within 24 hours to the CA</li> </ul>	<b>SP = 8</b>
<p><b>Pollution as a result of waste emanating from operation activities:</b></p> <p>Uncontrolled waste generated from the activities of the foundry such as general, health care and hazardous wastes are more likely inherited from operation activities.</p>	<p><b>High</b> <b>(60)</b></p> <p><b>SP= (M + D + S) × P</b> <b>SP= (5 + 5 + 2) × 5</b> <b>SP =60</b></p>	<ul style="list-style-type: none"> <li>➤ All workers must undergo waste management training.. Training programmes and appropriate information on material handling and spill prevention and response must be provided to all relevant staff.</li> <li>➤ Have sufficient and separate bins for general, medical and hazardous waste disposal by implementing the Integrated Waste Management approach: segregation of waste into separate bins and clearly marked for each waste type.</li> </ul>	<p><b>Negligible</b> <b>(10)</b></p> <p><b>SP= (M + D + S) × P</b> <b>SP= (2 + 2 + 1) × 2</b> <b>SP = 10</b></p>

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
<b>ADF Operational Phase</b>			
		<ul style="list-style-type: none"> <li>➤ Refuse must be removed regularly to licensed landfill sites.</li> <li>➤ Hazardous waste must be stored in a secured waste receptacle and disposed of at a registered waste disposal site.</li> <li>➤ Adequate sanitary facilities and ablutions on the project site must be provided for all personnel throughout the project area.</li> <li>➤ All waste manifest and disposal certificates must be kept on record.</li> <li>➤ Annual audits must include waste management in the scope.</li> <li>➤ All non-conformance to AEL, EA and EMP conditions must be reported within 24 hours to the CA</li> </ul>	
<p><b>Loss of plant Species of Conservation Concern (SCC):</b></p> <p>The uncontrolled release of high levels of PM, SO<sub>2</sub> and NO<sub>x</sub> (NO<sub>2</sub>), lead, cadmium or Sulphur Oxides (SO<sub>x</sub>) is likely to impact certain plant species in a number of ways such as changes in plant growth, metabolism and rate of photosynthesis; Over production of reactive oxygen species (ROS) which will result in the physical damage to plant</p>	<p style="text-align: center;"><b>Medium-High (44)</b></p> <p style="text-align: center;"><b>SP= (M + D + S) × P</b> <b>SP= (5 + 4 + 2) × 4</b> <b>SP = 44</b></p>	<ul style="list-style-type: none"> <li>➤ The application of appropriate mitigation techniques, in combination with regular air quality monitoring must be undertaken.</li> <li>➤ Isokinetic stack emission monitoring must be conducted bi-annually or earlier at the discretion of the CA. Results must be reported to the CA.</li> <li>➤ An Environmental Risk Assessment (ERA) must be conducted on when the Isokinetic</li> </ul>	<p style="text-align: center;"><b>Negligible (5)</b></p> <p style="text-align: center;"><b>SP= (M + D + S) × P</b> <b>SP= ( 1+ 1 + 3) × 1</b> <b>SP = 5</b></p>

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
<b>ADF Operational Phase</b>			
<p>membranes and the destruction of cells within the plant, slowing and/ or inhibited seed germination, root elongation, and the fluctuations in water and protein levels.</p> <p>Noticeably, Simon's Town is a part of the Cape Peninsula, and the surrounding habitat contains plant species which are not only Critically Endangered but are endemic to this region.</p>		<p>stack emission monitoring indicates high concentration of pollutant and large scale pollutant dispersion.</p> <ul style="list-style-type: none"> <li>➤ The ERA must be conducted on subjects which are likely to demonstrate source-pathway-receptor from pollutant dispersion, from the environmental receptors for identified pollutants.</li> <li>➤ A botanist must be contracted by the foundry (applicant) to conduct the ERA on <i>Adhoc</i> basis, should the Isokinetic stack emission monitoring indicates. The Botanist must make appropriate recommendations to prevent flora-related incidents from occurring, continuing or recurring</li> <li>➤ The ERA must inform the duties of the ECO. Monitoring is recommended during the flowering season to assess future changes in plant growth and metabolism from the foundry pollutant dispersion, as described by the emission survey.</li> </ul>	

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
<b>ADF Operational Phase</b>			
		<ul style="list-style-type: none"> <li>➤ All non-conformance to the EA and EMPr conditions must be reported within 24 hours to the CA</li> </ul>	
<p><b>Loss of Fauna Species of Conservation Concern (SCC):</b></p> <p>The uncontrolled release of high concentrations of PM, SO<sub>2</sub> and NO<sub>x</sub> (NO<sub>2</sub>), lead, cadmium or sulphur oxides (SO<sub>x</sub>) is likely to impact certain animal species in a number of ways: Decrease air quality and the release of toxins into the will impact the respiratory organs of species and may cause certain cancers and disease. Furthermore, indirect impacts may be associated with the bio-accumulation of certain toxins stored within certain prey species (e.g. residue falling on grass seeds eaten by rodents), which may in turn affect species outside of the study area.</p> <p>However, the field investigation had limited observations of the presence of faunal SCC due to a combination of local disturbances (motorists, pedestrian, domestic pets) and as a result of natural habitat being limited within the study area.</p>	<p style="text-align: center;"><b>Medium</b> <b>(33)</b></p> <p style="text-align: center;"><b>SP= (M + D + S) × P</b> <b>SP= (5 + 4 + 2) × 3</b> <b>SP = 33</b></p>	<ul style="list-style-type: none"> <li>➤ The application of appropriate mitigation techniques, in combination with regular air quality monitoring must be undertaken.</li> <li>➤ Isokinetic stack emission monitoring must be conducted bi-annually to ensure that pollutant levels are monitored and are within the set regulatory limits.</li> <li>➤ The ERA must be conducted should the emission survey indicate high emission levels and wide pollutant dispersion.</li> <li>➤ The ERA must be conducted on subjects which are likely to demonstrate source-pathway-receptor from pollutants dispersion, on the environmental receptors for identified pollutants.</li> <li>➤ A Zoologist must be contracted by the foundry to conduct ERA, should the emission survey indicate high concentration and large scale dispersion of foundry pollutants. The Zoologist must make appropriate recommendations to prevent fauna related</li> </ul>	<p style="text-align: center;"><b>Negligible</b> <b>(5)</b></p> <p style="text-align: center;"><b>SP= (M + D + S) × P</b> <b>SP= ( 1+ 1 + 3) × 1</b> <b>SP = 5</b></p>

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
<b>ADF Operational Phase</b>			
		<p>incidents from occurring, continuing or recurring</p> <ul style="list-style-type: none"> <li>➤ The ERA must inform the duties of the ECO.</li> <li>➤ A fixed-point photography monitoring programme must be compiled by the Applicant, in consultation with a specialist. Fixed Point Photography Point must be situated within Boulders Beach, and throughout section of the fynbos habitat found within the study area.</li> <li>➤ All non-conformance to the EA and EMP conditions and mortality of SCC linked to the activities of the foundry must be reported within 24 hours to the CA.</li> </ul>	
<p><b>Disturbance of terrestrial species habitat</b></p> <p>The uncontrolled release of high levels of PM, SO<sub>2</sub> and NO<sub>x</sub> (NO<sub>2</sub>), lead, cadmium or sulphur oxides (SO<sub>x</sub>) is likely to impact habitats in a number of ways:</p> <ul style="list-style-type: none"> <li>○ loss of plant species caused by pollution incidents will impact other organisms in the food chain;</li> </ul>	<p style="text-align: center;"><b>Medium</b> <b>(33)</b></p> <p><b>SP= (M + D + S) × P</b> <b>SP= (5 + 4 + 2) × 3</b> <b>SP = 33</b></p>	<ul style="list-style-type: none"> <li>➤ Isokinetic stack emission monitoring must be conducted bi-annually as to ensure that pollutant levels are monitored and are within the set regulatory limits.</li> <li>➤ A relevant specialist must be contracted by the foundry to undertake an ERA should there be evidence of habitat degradation caused by the activities of the foundry. The specialist must make appropriate</li> </ul>	<p style="text-align: center;"><b>Negligible</b> <b>(5)</b></p> <p><b>SP= (M + D + S) × P</b> <b>SP= ( 1+ 1 + 3) × 1</b> <b>SP = 5</b></p>



Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
<b>ADF Operational Phase</b>			
<ul style="list-style-type: none"> <li>○ loss of plants may lead to lead alien weed infestations;</li> <li>○ excess levels of pollutants enter watercourses and contaminate water bodies;</li> </ul> <p>The Screening Report identified a very high sensitivity for developments in this area, due to the proximity of an endangered ecosystem and the area being a strategic water source area.</p> <p>However, the field investigation within PAOI observed that no external indication of stress or abnormal habitat degradation was noted. Plant species were in flower, and the presence of a wide variety of species at different life-form stages indicated that natural function was still intact.</p>		<p>recommendations to prevent habitat-related incidents from occurring, continuing or recurring</p> <ul style="list-style-type: none"> <li>➤ The ERA must inform the duties of the ECO</li> </ul>	
<p><b>Disturbance to surrounding wildlife:</b></p> <p>PM, SO<sub>2</sub> and NO<sub>x</sub> (NO<sub>2</sub>), lead, cadmium or sulphur oxides (SO<sub>x</sub>) are resistant to degradation once released into the environment. and can accumulate in species and in the food chain. Persistent pollutants in the air, land and water can result in</p>	<p><b>Medium</b></p> <p><b>(33)</b></p> <p><b>SP= (M + D + S) × P</b></p> <p><b>SP= (5 + 4 + 2) × 3</b></p> <p><b>SP = 33</b></p>	<ul style="list-style-type: none"> <li>➤ The application of appropriate mitigation techniques, in combination with regular air quality monitoring must be undertaken.</li> <li>➤ An environmental incident register must be compiled, and updated whenever any incident is observed or reported by any</li> </ul>	<p><b>Very-Low</b></p> <p><b>(12)</b></p> <p><b>SP= (M + D + S) × P</b></p> <p><b>SP= (2+ 1 + 3) × 2</b></p> <p><b>SP =12</b></p>

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
<b>ADF Operational Phase</b>			
<p>decreased growth and reproduction in plants and animals, and neurological effects in vertebrates. Moreover, the high levels of pollutant concentration may impact animal-plant interactions such as pollinators (bees, beetles, flies, moths and butterflies), as the uncontrolled changes to air quality and the release of toxins into the air may have significant impacts to this ecological process, and an indirect impact to plant and animal species diversity over the life cycle of the facility.</p> <p>Given the already disturbed and developed nature of the area around the foundry, the probability of such impacts directly from the foundry remains low.</p>		<p>stakeholder. The nature of the incident, date and contact details of the reporter must be recorded (with their permission).</p> <ul style="list-style-type: none"> <li>➤ Conduct a bi-annual stack emission survey and report the results.</li> <li>➤ The ERA must be conducted should the ERA indicate evidence or reports of disturbance of wildlife caused by the activities of the foundry.</li> <li>➤ The ERA must be conducted on subjects which likely to demonstrate source-pathway-receptor from pollutants dispersion and to the environmental receptors for the identified pollutants.</li> <li>➤ An appropriate specialist must be contracted by the foundry to conduct the ERA. The specialist must make appropriate recommendations to prevent wildlife-related incidents from occurring, continuing or recurring</li> <li>➤ The ERA must inform the duties of the ECO</li> <li>➤ All non-conformance to the EA and EMP conditions and wildlife impacts linked to the</li> </ul>	

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
<b>ADF Operational Phase</b>			
		activities of the foundry must be reported within 24 hours to the CA.	
<p><b>Soil runoff within the facility:</b></p> <p>The foundry is within the Simon's Town naval base, and the dockyard has a completely concrete surface. Hence there are no impacts regarding soil run-off during operation of foundry.</p> <p>Upon site investigation, there were no signs of concrete floor structure defect or evidence of soil runoff.</p>	<p><b>Negligible</b></p> <p><b>(4)</b></p> <p><b>SP= (M + D + S) × P</b>  <b>SP= (1 + 2 + 1) × 1</b>  <b>SP =4</b></p>	<ul style="list-style-type: none"> <li>➤ Monitor the facility and repair concrete floor defect.</li> <li>➤ The facility must be swept and cleaned regularly to prevent accumulation of dust from foundry operations and soils brought in by vehicles.</li> <li>➤ All sand stockpiles must be appropriately stored with the necessary bunding and cover to prevent blowing around or runoff.</li> </ul>	<p><b>Negligible</b></p> <p><b>(3)</b></p> <p><b>SP= (M + D + S) × P</b>  <b>SP= (1+ 1 + 1) × 1</b>  <b>SP = 3</b></p>
<p><b>Potential loss of wetland habitat:</b></p> <p>The ADF is within the naval base and the site is within coastal habitat. No NFEPA wetland were observed with 500m of the foundry.</p> <p>The NFEPA wetland were found outside the pollutant dispersion zone. The operation of the foundry has negligible impact in respect to wetland ecosystem services.</p>	<p><b>Low</b></p> <p><b>(30)</b></p> <p><b>SP= (M + D + S) × P</b>  <b>SP= (4 + 4 + 2) × 3</b>  <b>SP = 30</b></p>	<ul style="list-style-type: none"> <li>➤ The application of appropriate mitigation techniques, in combination with regular air quality monitoring must be undertaken.</li> <li>➤ An ERA must be conducted should there be evidence or reports of impacts on wetland habitat linked to the activities of the foundry.</li> <li>➤ An appropriate specialist must be contracted by the foundry to conduct the ERA. The specialist must make appropriate recommendations to prevent wetland-related</li> </ul>	<p><b>Negligible</b></p> <p><b>(4)</b></p> <p><b>SP= (M + D + S) × P</b>  <b>SP= (1+ 1 + 2) × 1</b>  <b>SP = 4</b></p>

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
<b>ADF Operational Phase</b>			
		<p>incidents from occurring, continuing or recurring</p> <ul style="list-style-type: none"> <li>➤ The ERA must inform the duties of the ECO</li> </ul>	
<p><b>Deterioration in surface water quality</b></p> <p>The ADF is within the naval base and site is within a coastal habitat. No NFEPA rivers and streams were observed within 500m of the foundry. Furthermore, the stormwater system within the foundry facility is reticulated into the municipal stormwater system. Hence no direct water impact related to foundry were evident.</p> <p>During the field assessment, a channel was observed, which could represent a small drainage line or watercourse. However, no water flow was observed. This potential drainage line is not associated with any significant flow and may simply be as a result of a geological fault line.</p> <p>The PM, SO<sub>2</sub> and NO<sub>x</sub> (NO<sub>2</sub>), lead, cadmium or sulphur oxides (SO<sub>x</sub>) are resistant to degradation in the environment and air pollutants can be added to</p>	<p><b>Low</b> <b>(22)</b></p> <p><b>SP= (M + D + S) × P</b> <b>SP= (5 + 4 + 2) × 2</b> <b>SP = 22</b></p>	<ul style="list-style-type: none"> <li>➤ The application of appropriate mitigation techniques, in combination with regular air quality monitoring.</li> <li>➤ Isokinetic stack emission monitoring must be conducted bi-annually or earlier at the discretion of the CA. The results must be reported to the CA.</li> <li>➤ An ERA must be conducted by the Aquatic Specialist should there be evidence of deterioration of water quality caused by the activities of the foundry.</li> </ul>	<p><b>Negligible</b> <b>(3)</b></p> <p><b>SP= (M + D + S) × P</b> <b>SP= (1+ 1 + 1) × 1</b> <b>SP = 3</b></p>

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
<b>ADF Operational Phase</b>			
surface water and sediments from foundry emissions.			
<p><b>Ground water contamination</b></p> <p>The uncontrolled hazardous material handling and poor waste management within the foundry is likely to cause potential leaks of hazardous substances. Such hazardous substances have the potential to enter the soil and watercourse systems.</p> <p>However, as the site is paved with concrete, it is unlikely that groundwater pollution may occur as a result of the current activities on site. Most areas where materials are stored are under roof and stored within lined and bunded facilities. Hence rainwater does not leach through or wash hazardous substances into clean water systems from these storage areas.</p>	<p style="text-align: center;"><b>Medium</b></p> <p style="text-align: center;"><b>(33)</b></p> <p><b>SP= (M + D + S) × P</b></p> <p style="text-align: center;"><b>SP= (5 + 4 + 2) × 3</b></p> <p style="text-align: center;"><b>SP = 33</b></p>	<ul style="list-style-type: none"> <li>➤ Monitor the facility and repair any concrete floor defect immediately</li> <li>➤ The facility must be swept and cleaned regularly to prevent accumulation of dust from foundry operations and soils brought in by vehicles.</li> <li>➤ All sand stockpiles must be appropriately stored with the necessary bunding and cover to prevent blowing around or runoff.</li> </ul>	<p style="text-align: center;"><b>Negligible</b></p> <p style="text-align: center;"><b>(4)</b></p> <p><b>SP= (M + D + S) × P</b></p> <p style="text-align: center;"><b>SP= (2+ 1+ 1) × 1</b></p> <p style="text-align: center;"><b>SP = 4</b></p>
<p><b>Social distress a result of uncontrolled ambient air pollution:</b></p> <p>PM, SO<sub>2</sub> and NO<sub>x</sub> (NO<sub>2</sub>), lead, cadmium or sulphur oxides (SO<sub>x</sub>) are resistant to breakdown once in the in the environment, and can be transported via</p>	<p style="text-align: center;"><b>Medium</b></p> <p style="text-align: center;"><b>(33)</b></p> <p><b>SP= (M + D + S) × P</b></p>	<ul style="list-style-type: none"> <li>➤ The furnaces and metal casting must be scheduled to operate during westerly wind conditions.</li> </ul>	<p style="text-align: center;"><b>Negligible</b></p> <p style="text-align: center;"><b>(4)</b></p> <p><b>SP= (M + D + S) × P</b></p>

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
<b>ADF Operational Phase</b>			
<p>ambient air. The high concentration for these pollutants will reduce the ambient air quality. Therefore, air pollution has been associated with reduced social competence (i.e., ability to effectively handle social interactions) as outdoor environment will not be favourable which is likely to affect road users and cause a nuisance.</p>	<p><b>SP= (5 + 4 + 2) × 3</b> <b>SP = 33</b></p>	<ul style="list-style-type: none"> <li>➤ Isokinetic stack emission monitoring must be conducted bi-annually or earlier at the discretion of the CA. The results must be reported to the CA.</li> <li>➤ Should the isokinetic stack emission survey indicate high level pollutant concentration and large scale dispersion, the foundry manager must cease the operation until the root cause is identified, and resume as directed by the CA.</li> <li>➤ An environmental incident register must be compiled and updated whenever any incident is observed or reported by any stakeholder. The nature of the incident, date and contact details of the reporter must be recorded (with their permission).</li> <li>➤ All non-conformance to AEL, EA and EMPr conditions must be reported within 24 hours to the CA</li> </ul>	<p><b>SP= (1 + 1+ 2) × 1</b> <b>SP = 4</b></p>

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
<b>ADF Operational Phase</b>			
<p><b>Impact on Human Health as a result of uncontrolled Ambient Air Pollution:</b></p> <p>The ADF results of the Air Quality Impact Assessment showed very little to no major impacts on the surrounding air quality with a 10 km radius, as operations contribute a maximum of 0.019% towards the NAAQS limits which is 75 µg/m<sup>3</sup> to 100m from the foundry.</p> <p>All the modelling results revealed that no exceedances of ambient standards occurred under any conditions. Sensitive receptors and residential areas near the plant concentrations for all pollutants showed to be less than 10% of NAAQS for all pollutants.</p> <p>However, uncontrolled emissions of PM will lead to health issues in receptors.</p> <p>Depending on the level of exposure to pollutants, the inhalation and oral exposure of humans to pollutants such as PM, SO<sub>2</sub> and NO<sub>x</sub> (NO<sub>2</sub>), lead, cadmium or sulphur oxides (SOX) in high levels may impact on human health, contributing mainly to respiratory diseases (such as asthma) and skin</p>	<p style="text-align: center;"><b>Medium-High (44)</b></p> <p style="text-align: center;"><b>SP= (M + D + S) × P</b> <b>SP= (5+ 4 + 2) × 4</b> <b>SP = 44</b></p>	<ul style="list-style-type: none"> <li>➤ The furnaces and metal casting must be scheduled to operate during westerly wind conditions.</li> <li>➤ Isokinetic stack emission monitoring must be conducted bi-annually or earlier at the discretion of the CA. The results must be reported to the CA.</li> <li>➤ Should the emission survey indicates high concentrations and wide pollutant dispersion., an ERA must be conducted on subjects which likely to demonstrate source-pathway-receptor from pollutants dispersion and to environmental receptors for the identified pollutants. The results for exposure and dose relationship must be linked to social (health) impact. Should the results show high significance, the foundry must cease operation until the root cause is addressed or as directed by the CA.</li> </ul>	<p style="text-align: center;"><b>Negligible (8)</b></p> <p style="text-align: center;"><b>SP= (M + D + S) × P</b> <b>SP= (2 + 1 + 1) × 2</b> <b>SP = 8</b></p>

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
<b>ADF Operational Phase</b>			
<p>problem. Such pollutants can also adversely affect the kidney function and the nervous, immune, reproductive, developmental and cardiovascular systems. High levels of exposure also affect the oxygen carrying capacity of the blood. Air pollution effects are most pronounced in children. Infants and young children are especially sensitive to lead exposures, which may contribute to behavioral problems, learning deficits and lowered IQ.</p>			
<p><b>Aesthetic / visual Impact:</b> There are no visual impact and change in land use character, as the foundry has been operational since 1968. The viewshed area and zone of visual influence for the ADF is considered “Low Visibility” or negligible as the site is streamlined to a built environment.</p>	<p><b>Very-Low</b> <b>(12)</b></p> <p><b>SP= (M + D + S) × P</b> <b>SP= (2 + 2 + 2) × 2</b> <b>SP = 12</b></p>	<ul style="list-style-type: none"> <li>➤ Good housekeeping must be practiced to maintain a clean and aesthetic site.</li> <li>➤ Waste must be collected regularly to prevent the piling of waste and scrap.</li> </ul>	<p><b>Negligible</b> <b>(4)</b></p> <p><b>SP= (M + D + S) × P</b> <b>SP= (1+ 1 + 2) × 1</b> <b>SP = 4</b></p>
<p><b>Social distress a result of noise pollution:</b> The noise generated by the operations and activities of the foundry are significantly muffled due to numerous other activities taking place within the dockyard. Additionally, it is not likely that the foundry noise levels will exceed the ambient noise levels given all the other noisy activities in the area.</p>	<p><b>Very-Low</b> <b>(12)</b></p> <p><b>SP= (M + D + S) × P</b> <b>SP= (2 + 2 + 2) × 2</b> <b>SP = 12</b></p>	<ul style="list-style-type: none"> <li>➤ In recognition of the inherently noisy and temporary nature of operation activities, specify standard operating hours during which the usual fixed noise limits do not apply. and foundry personnel must be adhered to.</li> </ul>	<p><b>Negligible</b> <b>(3)</b></p> <p><b>SP= (M + D + S) × P</b> <b>SP= (1+ 1 + 1) × 1</b> <b>SP = 3</b></p>



Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
<b>ADF Operational Phase</b>			
		<ul style="list-style-type: none"> <li>➤ The necessary personal protective equipment (PPE) such as ear muffs must be worn by all during operation of the foundry.</li> </ul>	
<p><b>Destruction of heritage resources:</b></p> <p>The ADF will not have an impact on any heritage resources and does not trigger any activities listed in the National Heritage Resources Act, Act 25 of 1999, as the project site has been operated as a foundry since 1968. Any impacts that may have been generated on cultural or historical sites cannot be mitigated at this late stage. The activity on site will not be changing, as this is merely an application for the continued operation of the existing facility.</p>	<p style="text-align: center;"><b>Negligible (3)</b></p> <p style="text-align: center;"><b>SP= (M + D + S) × P</b> <b>SP= (1+ 1 + 1) × 1</b> <b>SP = 3</b></p>	<ul style="list-style-type: none"> <li>➤ The foundry manager must lodge a formal application/notice to the Heritage Western Cape (HWC) agency for any structural repair to the foundry.</li> <li>➤ The relevant department in the CTM must also be informed of any structural changes to the foundry.</li> </ul>	<p style="text-align: center;"><b>Negligible (3)</b></p> <p style="text-align: center;"><b>SP= (M + D + S) × P</b> <b>SP= (1+ 1 + 1) × 1</b> <b>SP = 3</b></p>
<p><b>Loss of archaeological and paleontological resources:</b></p> <p>There are no impacts related to archaeological and paleontological resources, as the project site has been operated as a foundry since 1968. Any impacts that may have been generated on archaeological and paleontological resources</p>	<p style="text-align: center;"><b>Negligible (3)</b></p> <p style="text-align: center;"><b>SP= (M + D + S) × P</b> <b>SP= (1+ 1 + 1) × 1</b> <b>SP = 3</b></p>	<ul style="list-style-type: none"> <li>➤ The foundry manager must lodge a formal application/notice to the Heritage Western Cape (HWC) agency for any structural repair to foundry.</li> <li>➤ The relevant department in the CTM must also be informed of any structural changes to the foundry</li> </ul>	<p style="text-align: center;"><b>Negligible (3)</b></p> <p style="text-align: center;"><b>SP= (M + D + S) × P</b> <b>SP= (1+ 1 + 1) × 1</b> <b>SP = 3</b></p>

Potential impact	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
<b>ADF Operational Phase</b>			
cannot be mitigated at this late stage. The activity on site will not be changing, as this is merely an EIA and AEL application for the continued operation of the existing foundry.			
<p><b>Traffic impact:</b> Traffic to and from the foundry is limited to the delivery of materials as well as the collection and removal of product and waste materials from the SA Naval Base. Other traffic is related to the arrival and departure of staff to and from work. The access to the site does not affect any main road traffic. No significant traffic implications are envisaged, given that the scope of the foundry activities has not changed since 1968 and is not likely to change in the near future.</p>	<p><b>Low</b> <b>(24)</b></p> <p><b>SP= (M + D + S) × P</b> <b>SP= (5 + 1 + 2) × 3</b> <b>SP = 24</b></p>	<ul style="list-style-type: none"> <li>➤ Appropriate traffic signage, traffic control signals, and message boards must be used for traffic accommodation in the work zone, truck turning points and same shall be visible by motorists and pedestrians.</li> <li>➤ The speed limit for access to the site must be set at 40 km/h and 20 km/h within the site.</li> </ul>	<p><b>Negligible</b> <b>(10)</b></p> <p><b>SP= (M + D + S) × P</b> <b>SP= (2 + 1 + 2) × 2</b> <b>SP =10</b></p>

**Table 16: Impact Assessment for Decommissioning of ADF Equipment**

Potential Impacts	Impact Significance without Mitigation	Proposed Mitigation Measures	Impact Significance with mitigation
<b>Decommissioning of ADF Equipment</b>			
<p><b>Social distress due to noise and air pollution:</b> Uncontrolled activities during decommissioning of foundry equipment may result in sensory disturbances (Noise and Air Pollution)</p>	<p><b>Medium</b> <b>(32)</b></p> <p><b>SP= (M + D + S) × P</b> <b>SP= (5 + 1 + 2) × 4</b> <b>SP = 32</b></p>	<ul style="list-style-type: none"> <li>➤ Schedule decommissioning activities to minimize sensory disturbance of environmental receptors ) who are likely to be exposed to air, noise and waste pollution.</li> <li>➤ Develop an EMP specific to the foundry equipment decommissioning.</li> </ul>	<p><b>Negligible</b> <b>(4)</b></p> <p><b>SP= (M + D + S) × P</b> <b>SP= (2 + 1 + 1) × 1</b> <b>SP =4</b></p>
<p><b>Waste Pollution</b> Pollution of the surrounding environment as a result of the handling, temporary storage and disposal of solid waste.</p>	<p><b>High</b> <b>(60)</b></p> <p><b>SP= (M + D + S) × P</b> <b>SP= (5 + 5 + 2) × 5</b> <b>SP = 60</b></p>	<ul style="list-style-type: none"> <li>➤ General waste such as construction and demolition waste and hazardous waste must be stored temporarily on site in suitable (and correctly labelled) waste collection bins and skips (or similar). Waste collection bins and skips should be covered with suitable material, where appropriate.</li> <li>➤ A waste management plan must be developed to manage all waste during the decommissioning.</li> <li>➤ All relevant waste related legislation at the time must be complied with.</li> </ul>	<p><b>Negligible</b> <b>(10)</b></p> <p><b>SP= (M + D + S) × P</b> <b>SP= (3 + 1 + 1) × 2</b> <b>SP = 10</b></p>
<p><b>Overall Mean significance (All Phases):</b> Nature of a project without mitigation</p>	<p><b>Low</b> <b>(30)</b></p> <p><b>681 ÷ 22=30</b></p>	Nature of a project post mitigation	<p><b>Negligible</b> <b>(6)</b></p> <p><b>140 ÷ 22=6</b></p>

## 15 CUMULATIVE IMPACT ASSESSMENT AND MITIGATION MEASURES

In terms of the EIA Regulations, the cumulative impact is considered from the holistic point of view. It means that the impacts of an activity are considered from the past, present and foreseeable future, together with the impact of activities associated with that activity. The activity itself may not be significant, but when combined with the existing and reasonably foreseeable impacts eventuating from similar or diverse activities may result in a significant change. “Cumulative impacts can be additive, synergistic, time crowding, neutralizing and space crowding” (DEAT, 2004b;14).

It is necessary to assess each potentially significant impact in terms of:

- ✚ Cumulative impacts; and
- ✚ The degree to which the impact may cause irreplaceable loss of resources.

**Table 17: Criteria for Cumulative Impacts**

<b>Cumulative Impact (CI)</b>	Low (1)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is unlikely that the impact will result in spatial and temporal cumulative change.
	Medium (2)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is probable that the impact will result in spatial and temporal cumulative change.
	High (3)	Considering the potential incremental, interactive, sequential, and synergistic cumulative impacts, it is highly probable/ definite that the impact will result in spatial and temporal cumulative change.
<b>Irreplaceable Loss of Resources (LR)</b>	Low (1)	Where the impact is unlikely to result in irreplaceable loss of resources.
	Medium (2)	Where the impact may result in the irreplaceable loss (cannot be replaced or substituted) of resources but the value (services and/or functions) of these resources is limited.
	High (3)	Where the impact may result in the irreplaceable loss of resources of high value (services and/or functions).

**Table 18: Prioritisation Factor (Cumulative Impacts)**

Impact Description	Alternative	Phase	Cumulative Impact	Irreplaceable Loss
<b>Biodiversity (flora):</b> Habitat fragmentation, loss of natural vegetation and introduction of invasive alien plant species (IAPS)	A, B, & C	Operation	1	1
<b>Biodiversity (flora):</b> Loss of plant species of conservation concern (SCC)	A, B, & C	Operation	1	1
<b>Fauna:</b> Loss of animal species of conservation concern (SCC)	A, B, & C	Operation	1	1
Impact on terrestrial surface water resource (rivers, wetlands)	A, B & C	Operation	1	1
Impact on ground water resource (Oil spillages & Ground water contamination)	A, B, & C	Operation	1	1
Erosion, slits and compaction.	A, B, & C	Operation	1	1
<b>Impact of Air Pollution:</b> Foundry emissions and dust	A, B, & C	Operation	2	1
Waste (General, Hazardous and HCW)	A, B, & C	Operation	2	1
Loss of Heritage Resources, fossils and Paleontological resources	A, B, & C	Operation	1	1
Visual Impact	A, B, & C	Operation	1	1
Social Impact: Social distress due to ambient air pollution	A, B, & C	Operation	2	1
Socio-economic Impact	A, B, & C	Operation	3+	1
Impact on Traffic	A, B, & C	Operation	1	1
Noise Pollution	A, B, & C	Operation	1	1
Impacts on existing services (properties or utility infrastructure)	A, B, & C	Operation	1	1

**Table 19: Description of Cumulative Impacts**

Impact	Impact Level	Description	Mitigation
<b>Ambient Air Pollution</b> Uncontrolled emissions from furnaces include PM and PM <sub>10</sub> , as well as typical combustion products including CO, CO <sub>2</sub> , SO <sub>2</sub> and NO <sub>x</sub> . In addition, furnaces may be sources of lead, cadmium or sulphur oxides (SO <sub>x</sub> )	Medium (2)	Uncontrolled foundry operation will result in accumulated Ambient Air Pollution within the pollutant dispersion zone, to the environmental receptors .	<ul style="list-style-type: none"> <li>As far as reasonably practicable, BAT must be utilised such as abatement control equipment, which are used to effectively reduce emissions.</li> <li>Ensure that abatement control equipment is regularly maintained, serviced and</li> </ul>

Impact	Impact Level	Description	Mitigation
emissions, depending on the type of fuel used to fire the furnace.			<p>repaired in accordance with manufacturers specifications.</p> <ul style="list-style-type: none"> <li>Isokinetic stack emission monitoring must be conducted bi-annually or earlier at the discretion of the CA. Results must be reported to the CA to ensure that pollutant levels are monitored and are within the set regulatory limits.</li> <li>The Operational Management Plan used for this facility must be updated to include all additional regulatory actions, findings and control regimes recommended within the AEL, EA And EMPr.</li> </ul>
<p><b>Social distress due to ambient air pollution</b></p> <p>Air pollution can contribute to health impacts and nuisance to road users and workers</p>	Medium (2)	<p>PM, SO<sub>2</sub> and NO<sub>x</sub> (NO<sub>2</sub>), lead, cadmium or sulphur oxides (SO<sub>x</sub>) are resistant to breakdown once they enter environment, and can be transported via ambient air. The high concentration of these pollutants will reduce the ambient air quality. Therefore, air pollution has been associated with reduced social competence (i.e., ability to effectively handle social interactions) as well as contribute to health impacts, as the</p>	<p>Comprehensive mitigation will include:</p> <ul style="list-style-type: none"> <li>Bi-annual Isokinetic stack emission monitoring or earlier at the discretion of the CA. Results must be reported to the CA.</li> <li>Should the isokinetic stack emission survey indicate high level pollutant concentrations and large scale dispersion, the foundry manager must cease the operation until the root cause is identified and addressed. Work may only resume as directed by the CA.</li> </ul>

Impact	Impact Level	Description	Mitigation
		<p>outdoor environment will not be favourable.</p>	<ul style="list-style-type: none"> <li>An environmental incident register must be compiled, and updated whenever any incident is observed or reported by any stakeholder. The nature of the incident, date and contact details of the reporter must be recorded (with their permission).</li> </ul>

## 16 SPECIALIST STUDIES IDENTIFIED

There were two specialist studies undertaken for this EIA, namely:

- Air Quality Impact Assessment
- Terrestrial Biodiversity Impact Assessment;

Environmental Screening Tool on the site and surrounding is recognized on the following themes:

**Table 20: Summary of Area Environmental Sensitivity**

Sensitivity	Sensitivity Theme
Very High	<ul style="list-style-type: none"> <li>• Terrestrial Biodiversity Theme</li> <li>• Archaeological and Cultural Heritage Theme</li> <li>• Defence Theme</li> </ul>
High	<ul style="list-style-type: none"> <li>• Civil Aviation Theme</li> </ul>
Medium	<ul style="list-style-type: none"> <li>• Agriculture Theme</li> </ul>
Low Sensitivity	<ul style="list-style-type: none"> <li>• Animal Species Theme</li> <li>• Aquatic Biodiversity Theme</li> <li>• Terrestrial Biodiversity Theme</li> </ul>

### 16.1 Motivation for Exclusion of Compliance Statements

The compliance statement for Civil Aviation Theme and Defence Theme were deemed to be unnecessary due the following reasons:

- The activity on site will not be changing, as this is merely an application for licensing in accordance with the current environmental legislation. Additionally, the continuing operation of the foundry will not make any new significant impact in this regard. Therefore, the facility has no impact on Civil Aviation.
- Armscor (SOC) Ltd manages and operates the South African Naval dockyard in Simon's Town, Western Cape, as a South African Navy's third-line maintenance and retro-fitting facility. This facility focusses on maintaining the required capabilities to support the SA Navy's operations, thereby providing for a planned preventative maintenance, corrective maintenance, upgrades, and reconstruction of SA Navy's



vessels. The foundry also produces some of the components for SA Navy vessels. Therefore, the activity applied for supports the Defence Theme.

Environmental Screening Tool has identified studies outlined (in **Table 21**) below.

**Table 21: Specialist Studies Identified by Environmental Screening Tool**

Specialist Study	Inclusion/Motivation for Exclusion
Air Quality Impact Assessment	The Air Quality Impact Assessment was conducted for this EIA, attached as (Appendix G1).
Ambient Air Quality Impact Assessment	The Ambient Air Quality Impact Assessment was covered in Air Quality Impact Assessment
Terrestrial Biodiversity Impact Assessment	The Terrestrial Biodiversity Impact Assessment was conducted for this EIA, attached as (Appendix G2).
Agricultural Impact Assessment	This study was not considered viable as the agriculture has shown a Medium Sensitivity Theme: The foundry is existing/operational, and within a naval base. There are no agricultural activities within the pollutant dispersion zone. According to the National Landcover Dataset (DEA, 2020), the study area contains: Dense Forest and Woodland; Low Shrubland (Fynbos); Natural Ocean; Residential Formal (low veg / grass); Natural Rock Surfaces; Commercial; and Natural Grassland, no agricultural landcover were delineated.
Landscape/Visual Impact Assessment	This study was not considered viable as the foundry has been operational for a number of decades, since 1968. The foundry is in line with local land use as the site is within a dockyard and associated workshop buildings. The entire site is walled, and the operations take place mostly within the warehouse infrastructure in the middle of the dockyard site. As a result, the foundry is not visible from outside the facility. Therefore, the viewshed area and zone of visual influence for the ADF's operation is considered "Low Visibility" or negligible as the site is streamlined to a built environment.
Archaeological and Cultural Heritage Impact Assessment	This study was not considered viable as the foundry has been operational for a number of decades, since 1968.

	<p>The ADF will not have an impact on any heritage resources and does not trigger any activities listed in the National Heritage Resources Act, as the project site has been operated as a foundry since 1968. Any impacts that may have been generated on cultural or historical sites cannot be mitigated at this late stage. The activity on site will not be changing, as this is merely an application for licensing in accordance with the current environmental legislation.</p> <p>Additionally, the continuing operation of the foundry will not make any new significant impact in this regard.</p>
Palaeontology Impact Assessment	<p>This study was not considered viable as a preliminary desktop study for palaeontological sensitivity of the naval base dockyard, reveals that the site falls within 'Low sensitivity'. The activity on site will not be changing, as this is merely an application for licensing in accordance with the current environmental legislation.</p> <p>Additionally, the continuing operation of the foundry will not make any new significant impact in this regard.</p>
Aquatic Biodiversity Impact Assessment	<p>This study was not considered viable as Aquatic Biodiversity Theme has a Low Sensitivity. There were no terrestrial water resources within 32m and 500m regulated area.</p>
Hydrology Assessment	<p>This study was not considered viable as Aquatic Biodiversity Theme has a Low Sensitivity. There were no terrestrial water resources within 32m and 500m regulated area.</p>
Noise Impact Assessment	<p>This study was not considered viable as noise from the foundry is within the ambient noise levels of the dockyard and is significantly muffled due to most activities taking place within the dockyard workshops.</p>
Traffic Impact Assessment	<p>This study was not considered viable as the foundry traffic access is linked to the dockyard, which was constructed during the establishment of the Simon's Town Naval Base.</p>
Health Impact Assessment	<p>The Health Impact Assessment was covered in the Air Quality Impact Assessment, through determination of foundry's pollution dispersion, assessed in terms of environmental health.</p>

Socio-Economic Assessment	This study was not considered viable as the foundry is operational and only applying for licensing requirement. The public participation provided consensus inputs from the neighbouring community on how the foundry must manage and report the air quality data), as a result it forms part of socio-economic assessment.
Plant Species Assessment	Low Sensitivity Theme: This study has been covered by Terrestrial Biodiversity Impact Assessment
Animal Species Assessment	Low Sensitivity Theme: This study has been covered by Terrestrial Biodiversity Impact Assessment

## 17 SUMMARY OF FINDINGS BY SPECIALIST

The summary of findings detailed below, are derived from the: Air Quality Impact Assessment; and the Terrestrial Biodiversity Impact Assessment, and are summarised as follows:

### 17.1 Air Quality Impact Assessment Findings

All modelling results revealed that no exceedances of ambient standards occurred under any conditions. Sensitive receptors and residential areas near the plant concentrations for all pollutants showed to be less than 10% of NAAQS for all pollutants.

There are industries within the area of the site and any background concentrations would be influenced from the different industries and vessels in the harbour within the Simon's Town region. These activities will contribute to PM<sub>10</sub> ambient concentrations within a 10km radius of the site under study. Low levels of PM, SO<sub>2</sub>, and NO<sub>x</sub> concentrations previously measured at the ADF was that of the emission data used to perform the modelling and indicates a very low to no impact to present ambient air conditions and sensitive receptors within a 10km radius of the site under study.

#### 17.1.1 The Regional Winds

The Annual surface air conditions show winds blowing predominantly from the South-Easterly (SE) direction and secondary winds blowing from the Westerly (W) direction. The annual wind speeds measure was in the range of 1.8 – 7.56 km/h.

### 17.1.2 Pollutants of Importance

The SO<sub>2</sub>, PM<sub>10</sub> and NO<sub>x</sub> (as NO<sub>2</sub>) were the pollutants of significant emissions from the site. These were assessed based on medium resolution, used for sensitive receptors and an overall domain of 10km dispersion. Residential areas were assumed to be sensitive receptor with the closest being 0.40km south from the site.

Background concentrations show that PM<sub>10</sub> concentrations are well below the annual standards of 40 µg/m<sup>3</sup>, SO<sub>2</sub> concentrations are well below the standard of 19ppb, and NO<sub>2</sub> concentrations are also well below the standard of 21 ppb over the 2021 period.

The maximum PM<sub>10</sub> concentration predicted over a 24-hour period was 0.014 µg/m<sup>3</sup> which is mainly concentrated within the ADF itself with the plum extending less than 100m from the site. Maximum PM<sub>10</sub> concentrations at residential areas showed to be a contribution of 0.005-0.003 µg/m<sup>3</sup> at worst meteorological conditions and highest emission rates surrounding the site over a 10km radius which indicates no major impacts. The background annual average for PM<sub>10</sub> measured within the region measured at 9.818 µg/m<sup>3</sup> which is 30.182 µg/m<sup>3</sup> below the annual NAAQS of 40µg/m<sup>3</sup>.

There was the maximum 1hr increase in concentrations of SO<sub>2</sub> is 0.334 µg/m<sup>3</sup> which occurs 70 meters south from the site and is 0.095% of the NAAQS for SO<sub>2</sub> over 1 hour. The closest residential area would see an increase of 0.050 µg/m<sup>3</sup> at 0.30km. Concentrations disperse outwards to other areas within the 10km radius including the harbour at a rate of 0.070 – 0.030 µg/m<sup>3</sup>. Increases to the annual average in residential areas will only be a maximum of 0.0005-0.0004 µg/m<sup>3</sup>. All SO<sub>2</sub> maximum concentrations (1hr, 24hr, and annual) indicate no major impacts surrounding the site.

The maximum 1 hour increase in concentrations of NO<sub>x</sub> (as NO<sub>2</sub>) is 11.7 µg/m<sup>3</sup> which is concentrated 70m south from the site, which is 5.85% of the NAAQS for NO<sub>2</sub> over 1 hour. The closest residential area would see an increase of 1.0 µg/m<sup>3</sup> at 0.30km. Concentrations disperse outwards to other areas within the 10km radius including the harbour at a rate of 1.0-6.0 µg/m<sup>3</sup>. The maximum annual concentration of NO<sub>2</sub> shows an increase of 0.237 µg/m<sup>3</sup>, which is only 0.593% of the NAAQS for NO<sub>2</sub> over a year. Increases to the annual average in

residential areas will only be a maximum of 0.010- 0.005 µg/m<sup>3</sup>. All NO<sub>2</sub> max concentrations (1hr, 24hr and annual) indicate no major impacts surrounding the site.

## 17.2 Terrestrial Biodiversity Impact Assessment Findings

A 500m Project Area of Influence was considered appropriate for the nature and scale of the activities taking place within the ADF.

The field assessment observed that a small portion (approximately 2.95 hectares) of natural habitat falling within the Peninsula Granite Fynbos boundary remained and fell within the PAOI. The remaining areas were transformed and have been replaced by residential properties, roadways and other unnatural land uses.

The foundry footprint does not occur within any protected areas. However, the Table Mountain National Park (approx. 350m away); The Cape Floral Region Protected Areas (approx. 330m away); and the Table Mountain National Park Marine Protected Area (approx. 23m away). Moreover, the study area contains three of the CBA categories, namely an Ecological Support Area, (ESA); Other Ecological Support Area (OESA) and Protected: In Perpetuity, located within the southern edge of PAOI.

There were four distinct habitat that delineated during the site visit within the study area, namely Peninsula Granite Fynbos (natural habitat), ocean and coastal habitat (location of Simon's Town Naval Base), secondary habitat (fringe between residential areas and the natural veld found to the south), and Settlement habitat (represents a portion of the study area within the PAOI). During the field assessment within the PAOI it was observed that the majority of the natural terrestrial and non-marine habitat is confined to a small section of the study area at the foot of the Table Mountain Nature Reserve. The vegetation communities within this area are devoid of any trees coverage and consist of dense *asteraceous* and *proteoid* type fynbos with few open patches, and limited alien encroachment. *Erica hiriflora* was notably more abundant among the rocky, yet open veld and become more disturbed and notably less diverse. All coastal vegetation (just above the tidal zone) within the study area has been transformed to establish existing commercial zone but is currently being rehabilitated within the Boulders Beach IBA.

The frequency of people walking with dogs may have influenced the ability to view animal species naturally. Verbal surveys with local residents, conducted during the assessment indicated that *Hystrix africaeaustralis* (Cape porcupine) and *Papio ursinus* (Chacma baboon) sightings were very common. This was confirmed by the fresh spoor throughout the study area. *Caracal caracal* (Caracal) sightings have been recorded within the peninsula but have not been seen by any of the residents who live within the area and use the trails within the study area.

The presence of birds on site is often directly attributed towards the presence of food on site and the existence of suitable nesting grounds. During the field assessment, a number of bird species were observed. All observed species were noted to be of a common status and are unlikely to be affected by the continued operation of the foundry within the naval base. Common bird species observed during the assessment were *Onychognathus morio* (Red-winged starling), *Falco rupicolus* (Rock kestrel), *Phalacrocorax carbo* (Great cormorant), *Thalasseus bergii* (Greater crested tern), and *Larus dominicanus* (Kelp gull).

### **17.2.1 Loss of Plant Community Structure and Diversity**

Unmitigated the release of gases such as cadmium, lead, sulphur dioxide in high levels may impact certain species in a number of ways, such as: Changes plant growth and metabolism and rate of photosynthesis; Over production of reactive oxygen species (ROS) which will result in the physical damage to plant membranes and the destruction of cells within the plant; Slowing and/ or inhibited seed germination; Root elongation; In addition, and amongst other impacts, the fluctuations in water and protein levels.

However, there were no external indication of stress or abnormal growth was noted. Plant species were in flower, and the presence of a wide variety of species at different life-form stages as indicated that natural function was still intact.

### **17.2.2 Loss of Plant Species of Conservation Concern (SCC)**

Simon's Town is a part of the Cape Peninsula, and the surrounding habitat contains plant species which are not only 'Critically Endangered' but are often endemic to this region and found nowhere else in the world. As such, any loss of plant SCC, will in most cases, be highly

significant and must be avoided. However, in terms of the study area itself, no significant species of conservation concern were observed. However, it is likely that these may exist, but were not recorded during the assessment (as per the findings of the DFFE screening tool).

### **17.2.3 Loss of Faunal Species of Conservation Concern (SCC)**

The limited observations of faunal SCC were made by the specialist. This finding was owed to a combination of local disturbances (motorists, pedestrian, domestic pets) and as a result of natural habitat being limited within the study area. Although all suitable natural habitat was assessed multiple times (nocturnal and diurnal periods as well as passively), a detailed species list could only be formed over multiple seasons, and over several years. The specialist is confident however, that the data from the DFFE screening tool and ADU (2022) is accurate, but confined to coastal dunes, rocky outcrops, and fynbos habitat found within the study area.

A decrease in air quality and the release of toxins into the environment will impact the respiratory organs of species, and may cause certain cancers and disease. Furthermore, indirect impacts may be associated with the bioaccumulation of certain toxins stored within certain prey species (e.g. residue falling on grass seeds eaten by rodents), which may in turn affect species outside of the study area.

## **18 RECOMMENDATIONS BY SPECIALISTS FOR INCLUSION IN EA**

The following are recommendation prescribed by the specialist in respect of the continued operation of the foundry:

### **18.1 Recommendations by Air Quality Assessment Specialist**

The Air Quality Impact Assessment was conducted by KCM Environmental Services (Pty) Ltd, and the following recommendations were made:

- d) The Impact Assessment indicates very little to no major impact on ambient air quality within the Simon's Town region and surrounding areas over a 10km radius. A monitoring programme will however still need to be put in place to ensure that emissions being released are within the limits as stipulated under section 40(1)(a) of the National Environmental Management: Air Quality Act of 2004 (Act 39 of 2004), in respect of Listed

Activity under Category 4, Sub-Category 4.10: Foundries, in terms of Section 21 of the Air Quality Act;

- e) Isokinetic stack emission monitoring must be conducted annually or earlier at the discretion of the CA;
- f) The methodology used must be as per Schedule A of NEM:AQA;
- g) As far as reasonably practicable, BAT must be utilised in terms of abatement control equipment which are used to effectively reduce emissions;
- h) Ensure that abatement control equipment is regularly maintained, serviced and repaired in accordance with manufacturers specifications.

## **18.2 Recommendations by Terrestrial Biodiversity Assessment Specialist**

The Terrestrial Biodiversity Impact Assessment was conducted by Afzelia Environmental Consultants (Pty) Ltd, and the following recommendations were made:

- a) A Fixed-Point Photography plan must be compiled to monitor possible landcover changes within the study area. Points must be established within the Boulders Beach IBA and the fynbos habitat found within the study area. The independent environmental auditor must approve all points and the report must be submitted to the CA on a monthly basis;
- b) All filters fitted on any extraction system must be specifically designed for handling the possible gas and particulates generated within the facility. The design must comply with industry best practise, local by-laws, international standards and ensure that all air released from the facility is sufficiently treated;
- c) Any mass die-off reported to the facility (whether related / or unrelated), within the study area, must result in the immediate cessation of operations at the time. Operations may commence again when the appointed independent environmental auditor has been contacted and provides an instruction to do so, in consultation with the CA.

In addition, all the other Mitigation Measures and Management Outcomes and conditions must be included in the AEL, EA and EMPr and must be complied with by the foundry.

The Terrestrial Biodiversity Assessment Specialist supported the foundry can continue to operate and that a favourable outcome of the EA application be considered by DFFE.



## **19 RECOMMENDATIONS FROM THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)**

Having considered all issues, included the views of interested and affected parties and the inputs from the specialist reports, the EAP recommends the authorization of this application.

### **19.1 Foundry Operation**

The following conditions and mitigation measures are recommended and should be considered in any authorization that may be granted by the CA in respect of the application.

- a) The foundry metal casting must be consolidated, and days for casting be scheduled based on consolidated orders, thus preventing daily metal casting.
- b) The input from I&APs and the Air Quality Impact Assessment indicated that, the foundry operations is likely to have least impact during prevailing westerly winds. In order to prevent large scale dispersion and direction of sensitive environment (such as residential and business area as well as environmental protected areas), the foundry melting and casting processes schedule must consider the favourable meteorological conditions, such as westerly winds with high velocity.
- c) Bi-annual Isokinetic stack emission monitoring or earlier at the discretion of the CA must be undertaken and monitoring results must be reported to the CA.
- d) Should the isokinetic stack emission survey indicate high-level pollutant concentration and large-scale dispersion, the foundry manager must cease the operation until the root cause is identified and addressed. Work may only resume once directed by the CA.
- e) The ERA must be conducted if there is evidence of high concentration of pollutants and wide pollutant dispersion. The ERA must be conducted on subjects which likely to demonstrate source-pathway-receptor from pollutants dispersion, and the environmental receptors for identified pollutants.
- f) The specialist/s undertaking the ERA must make appropriate recommendations to prevent environment-related incidents from occurring, continuing or recurring.
- g) The ERA must inform the duties of the ECO
- h) An environmental incidents register must be compiled and updated whenever any incident is observed or reported by any stakeholder. The nature of the incident, date and contact details of the reporter must be recorded (with their permission).

- i) All non-conformances to AEL, EA and EMPr conditions must be reported within 24 hours to the CA; an action plan (corrective and preventative measures) must be developed and implemented within 14 days of the non-conformance.

### **19.2 Foundry Maintenance and Decommissioning of Equipment**

- a) Schedule the ADF equipment decommissioning activities to minimise sensory disturbance of environmental receptors that will be exposed to air pollution.
- b) Put in place effective control dust plans, during equipment decommissioning.
- c) Develop and implement a Waste Management Plan for the maintenance and foundry equipment decommission. The WMP must include management of general waste, in particular construction and demolition waste and hazardous waste storage, disposal and retention of waste statistics

## **20 ENVIRONMENTAL IMPACT STATEMENT**

The ADF is in operation since 1968. The application for authorization of this activity is only for the current operational phase of the foundry to ensure compliance with current legal requirements especially in terms of AEL.

The environmental assessment included an analysis of 21 key environmental aspects relevant to the area and the activity, as well as two specialist studies and engagements with relevant stakeholders. Of the 21 environmental aspects analysed, the significance was determined as follows: 1 was rated high, 6 were rated medium-high and 7 were rated medium. The other 7 were rated low, very low and negligible. With the implementation of mitigation measures, 17 of the impacts were rated negligible and 4 were rated very low.

The Air Quality Impact Assessment concluded that the ADF will have little to major impact on ambient air quality and that of health within the Simon's Town region due to the operation of the ADF.

The Terrestrial Biodiversity Assessment concluded that the operation of the foundry will have a moderate impact on the receiving terrestrial environment without any mitigation measures.

However, with the implementation of all the mitigation measures, it was assessed that the foundry would have a low impact.

In view of the foregoing, it is evident that the continued operation of the foundry will not have significant environmental impacts in the area.

## **21 CONCLUSION AND EAP OPINION**

The planned activities for the ADF and preferred alternatives support the security of South Africa, as it provide components for repair and servicing of SA Navy vessels in Simon's Town. The ADF therefore renders relevant and efficient service to the SA Navy which supports the South African National Defence Force (SANDF) to fulfil its constitutional mandate, namely, "To defend and protect the Republic of South Africa, its territorial integrity and its people in accordance with the Constitution and the principles of international law regulating the use of force". To support this mandate and to also ensure that the Sustainable Development Goals 3, 6, 12, 13, 14, 15 and 16 and the objectives of the SA National Development Plan (NDP) are realised through this project, the National Web-Based Environmental Screening Tool (NWBEST) was used to generate the environmental sensitivity report of the foundry. Additionally, an Initial Site Sensitivity Verification study was undertaken to confirm or dispute the environmental sensitivity as identified by the NWBEST. The EAP is of the view that the EA should be granted on certain conditions that are outlined in this report. After the EA has been granted, it is the applicants' responsibility to ensure that all recommendations outlined in this report as well as in the EMPr are fully implemented and complied with.

The decision to grant or refuse authorisation in terms of Section 24 of NEMA must be made in the light of the provisions of the Principles of NEMA. Section 24 provides that, in order to give effect to the general objectives of integrated environmental management laid down in NEMA, the potential impact on the environment of listed activities must be considered, investigated, assessed, and reported on to the CA charged by the Act with deciding applications for EA. A Draft Environmental Impact Assessment Report (DEIR) concerning the impact of the operation of the foundry including mitigation actions, has been compiled and submitted as prescribed and authorisation may only be issued after consideration of such report.

The findings of the specialist studies conclude that there are no environmental fatal flaws that should prevent the foundry from proceeding, provided that the recommended mitigation and management measures are implemented.

We submit that the environmental process undertaken thus far complies with these requirements and that this report covers the full suite of potential environmental issues related to the operation of the foundry. All potential impacts have been evaluated and responded to by either complete avoidance where possible, or by recommendation of the most appropriate and feasible mitigation measures. The preferred/mitigated development proposal presented in this report is responsive to the integrated results of the assessment of potential impacts made by the various specialists on the project team.

Based on comparative evaluation of the various alternatives, including the No-Go option, it is evident that the '*Alternative A: Demand Alternative*', the '*Alternative B: Scheduling Alternative*', the '*Alternative C: Design & Technology Alternative*' can meet the required objections to offset the No-Go option (subject to the implementation of recommended development mitigation measures). This DEIR, therefore, concludes that the assessment of the impact for the ADF has been considered via a balanced approach, mindful of cumulative impacts, need and desirability of the project and that the overall negative environmental impacts will be of very low significance. As such, the project can be considered for environmental authorisation subject to implementation of the recommended phased approach and specialist mitigation measures as specified in the EMPr.

*Written submissions must be addressed to:*

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## APPENDICES

## APPENDIX A. EAP DECLARATION OF INFORMATION

## APPENDIX B. ENVIRONMENTAL MANAGEMENT PLAN(EMPR)

## APPENDIX C. LOCALITY MAP AND CASE IMAGES

## C-1: Locality & Sensitivity Map

## C-2: Other Maps

## C-3: Case Images

## APPENDIX D. SITE LAYOUT



## APPENDIX E. PUBLIC PARTICIPATION PROCESS

## E-1: Onsite notices

## E-2: Newspaper adverts

**E-3: PP Plan and Register of I&APs**

## E-4: Proof of Document Circulations

## E-5: I&APs Comments and Responses

## **E-6: Background Information Document (BID)**

**E-7: Minutes of the Pre-Application meeting**



**E-8: Acknowledgement Letters**

## **E-9 : Acceptance of Scoping Report**

## APPENDIX F. EAP'S CV(S)

## APPENDIX G. SPECIALIST STUDIES

## G-1: Air Quality Impact Assessment

## **G-2: Terrestrial Biodiversity Impact Assessment**

## APPENDIX H: WEB-BASED ENVIRONMENTAL SCREENING REPORT

**APPENDIX I: ADF COMPLIANCE NOTICE AND RESPONSES**



