

Biovac Construction ESMP



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Environmental and Social Management Plan (ESMP) for the Construction Phase

Proposed Vaccine Production Facility and Associated Infrastructure, located in Pinelands, Western Cape Province

The Biologicals and Vaccines Institute of Southern Africa (Pty) Ltd

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Making Sustainability Happen

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Basis of Report

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Executive Summary

The Biologicals and Vaccines Institute of Southern Africa (Pty) Ltd (Biovac) proposes the construction of a new vaccine production facility and associated infrastructure located in Pinelands, Western Cape Province. The project will support vaccine manufacturing activities in compliance with applicable regulatory, biosafety and quality requirements.

This Construction Environmental and Social Management Plan (C-ESMP) has been prepared by SLR Consulting (South Africa) (Pty) Ltd to address the construction phase only of the Project, in response to the requirements of international lenders, including the African Development Bank (AfDB), the International Finance Corporation (IFC) and the European Investment Bank (EIB).

The purpose of the C-ESMP is to ensure that environmental, social, labour, health and safety, and community health and safety risks associated with construction activities are effectively identified, managed, monitored and mitigated in accordance with:

- Applicable South African legislation;
- AfDB Operational Safeguards (OS);
- IFC Performance Standards;
- EIB Environmental and Social Standards; and
- World Bank Group Environmental, Health and Safety Guidelines.

The C-ESMP sets out clear roles and responsibilities, mitigation measures, monitoring requirements, reporting procedures, grievance mechanisms, emergency preparedness arrangements, and audit processes to be implemented by the Proponent, the Principal Contractor and appointed subcontractors throughout construction.

Key aspects addressed in the C-ESMP include, inter alia, occupational health and safety, labour and working conditions, waste management, air quality and dust control, noise and vibration management, traffic and community safety, hazardous materials management, emergency preparedness and response, stakeholder engagement, and rehabilitation and reinstatement of areas disturbed during construction.

Implementation of the C-ESMP is supported by adequate financial, technical and human resources, including contractor-embedded Health, Safety and Environmental (HSE) budgets and selected separately costed monitoring and auditing measures. Compliance with the C-ESMP will be verified through routine site inspections, internal and external audits, and regular reporting to the Proponent and lenders.

Through the implementation of this C-ESMP, Biovac and its contractors demonstrate their commitment to responsible environmental and social management, protection of workers and surrounding communities, and alignment with lender requirements and Good International Industry Practice during the construction phase of the Project.



Table of Contents

Basis of Report	ii
Executive Summary	iii
Acronyms and Abbreviations	vi
1.0 Introduction	1
1.1 Project Description	1
1.2 Construction Scope	2
1.3 Aim of the C-ESMP	2
1.4 Objectives of the C-ESMP	3
2.0 Legal and Regulatory Framework	4
2.1 National Legal Requirements	4
2.2 International Requirements	4
3.0 Roles and Responsibilities	4
4.0 Training and Environmental Awareness.....	10
5.0 Grievance Redress Mechanism.....	10
5.1 Worker Grievance Redress Mechanism	11
5.2 Community Grievance Redress Mechanism.....	11
5.3 Oversight and Reporting.....	11
6.0 Reporting Procedures.....	11
6.1 Site Documentation	11
6.2 Method Statements	12
6.2.1 High-risk construction activities	13
6.2.2 Activities with significant potential environmental impacts	13
6.2.3 Activities involving community health and safety risks	13
7.0 Emergency Preparedness and Response	14
7.1 Emergency Preparedness and Response Plan	14
7.2 Roles and Responsibilities	15
7.3 Coordination and Communication	16
7.4 Training, Drills and Review.....	16
8.0 Environmental and Social Management System – Risk Identification and Risk Register.....	16
8.1 Purpose and Alignment with Lender Requirements	16
8.2 Risk Identification Methodology	16
8.3 ESMS Risk Register – Construction Phase	17
8.4 Monitoring, Review and Continuous Improvement.....	17
8.5 Management of Change	17



9.0 Audit.....	29
9.1 Internal Audits	29
9.2 External Audits	29
9.3 Audit Methodology.....	29
9.4 Corrective Actions	30
10.0 Environmental and Social Management Plan.....	31
10.1 Construction Phase	31
10.2 Monitoring Plan	56
11.0 Budget and Resources for C-ESMP Implementation	76
11.1 Notes on C-ESMP Costing	78
12.0 Conclusion.....	78
Record of Report Distribution	80

Tables in Text

Table 3-1: Roles and Responsibilities	5
Table 7-1: Emergency Preparedness and Response Plan Roles and Responsibilities.....	15
Table 8-1: ESMS Risk Register.....	19
Table 9-1: ESMP Compliance Ratings	30
Table 10-1: ESMP for Construction Phase.....	31
Table 10-2: Construction Environmental and Social Monitoring Plan	56
Table 11-1: Indicative Costing for Implementation of the C-ESMP	76

Figures in Text

Figure 1-1: Locality Map of Proposed Site.....	1
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Acronyms and Abbreviations

AfDB	African Development Bank
CAP	Corrective Action Plan
CAR	Corrective Action Register
C-ESMP	Construction Environmental and Social Management Plan
CFP	Chance Finds Procedure
CID	City Improvement District
CLO	Community Liaison Officer
CLS	Calibre Life Sciences (Pty) Ltd
CSR	Corporate Social Responsibility
DEA&DP	Department Of Environmental Affairs and Development Planning
E&S	Environmental And Social
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EO	Environmental Officer
ESIA	Environmental and Social Impact Assessment
EPC	Engineering, Procurement and Construction
EPRP	Emergency Preparedness and Response Plan
ESMP	Environmental And Social Management Plan
ESMS	Environmental and Social Management System
ESS	Environmental and Social Standard
GBV	Gender Based Violence
GHG	Greenhouse Gases
GIIP	Good International Industry Practice
GRM	Grievance Redress Mechanism
HDX	Human Development Accelerator
HR	Human Resources
HSE	Health, Safety and Environment
HVAC	Heating, Ventilation and Air Conditioning
IFC	International Finance Corporation
ILO	International Labour Organisation
KPI	Key Performance Indicator
MEP	Mechanical, Electrical and Plumbing
MoC	Management of Change
MSDS	Material Safety Data Sheets
NCR	Non-Conformance Report



NEMA	National Environmental Management Act
NEM: WA	National Environmental Management: Water Act
OEM	Original Equipment Manufacturer
OHS	Occupational Health & Safety
OS	Operational Safeguards (AfDB)
PPE	Personal Protective Equipment
PS	Performance Standard
SAHRA	South African Heritage Resources Agency
SANS	South African National Standards
SAPS	South African Police Services
SDC	Safe Disposal Certificate
SEA	Sexual Exploitation and Abuse
SEP	Stakeholder Engagement Plan
SMME	Small Medium and Micro Enterprise
SARTSM	South African Road Traffic Signs Manual
TMP	Traffic Management Plan
TRIR	Total Recordable Injury Rate
WBG	World Bank Group



1.0 Introduction

1.1 Project Description

The Biological and Vaccines Institute of Southern Africa (Pty) Ltd, trading as the Biovac Institute (hereafter referred to as Biovac) ("The Proponent"), proposes the development of a new vaccine production facility and associated infrastructure on unregistered Erf 183467. This site comprises a portion of the remainder of Erven 118296, 103659, and 24176, as well as Erf 1056, located in Pinelands, Western Cape.

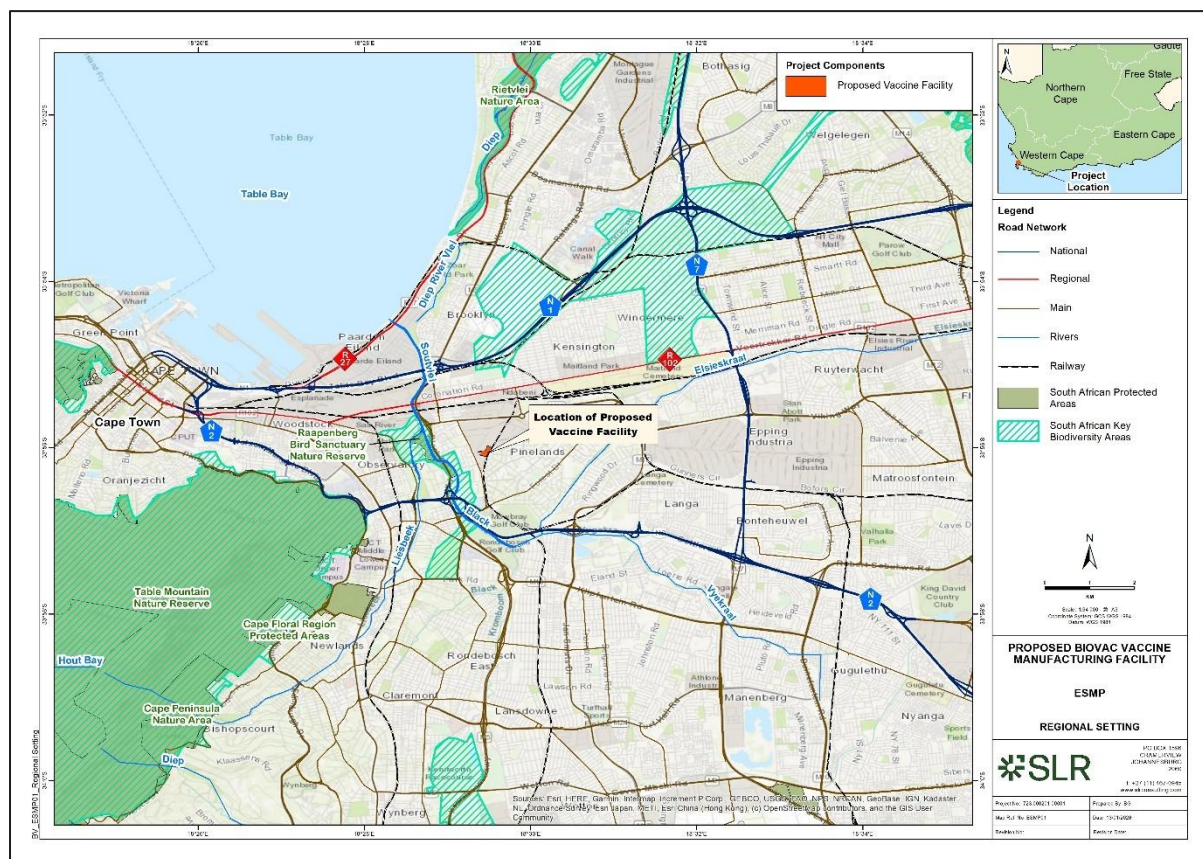


Figure 1-1: Locality Map of Proposed Site

The proposed project will include the following key components:

- A manufacturing building for vaccine production, filling, and packaging.
- A utility building; and
- Associated municipal service infrastructure.

The total footprint of the development is approximately 14,854 m².

The Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) has confirmed that the proposed project does not trigger any listed activities as defined under the National Environmental Management Act (NEMA) (Act No. 107 of 1998) and the associated Environmental Impact Assessment (EIA) Regulations, 2014 (GN No. R. 982 of 2014). Consequently, an EIA process in terms of South African legislation is not required.



Biovac has approached the International Finance Corporation (IFC), the European Investment Bank (EIB), and Human Development Accelerator (HDX) to secure funding for the development. In response to lender requirements, SLR Consulting has prepared this Environmental and Social Management Plan (ESMP) for the construction phase (only).

1.2 Construction Scope

The construction phase will commence once the Civil Works Phase has been completed and will be done by the appointed design-and-build contractor, Calibre Life Science (Pty) Ltd (CLS). This phase encompasses the full construction of the vaccine manufacturing facility, including all building structures, architectural works, mechanical and electrical installations, process utilities, and associated external works.

Construction activities will include, but are not limited to:

- Erection of the main building structures and superstructures
- Construction of internal and external walls, roofing, floors, and finishes
- Installation of Mechanical, Electrical and Plumbing (MEP) systems
- Installation of key utilities and services, including Heating, Ventilation and Air Conditioning (HVAC), electrical supply, water systems, wastewater connections, gas systems, and fire protection
- Construction and fit-out of cleanrooms, laboratories, plant rooms, and technical areas
- Installation of process utilities and specialist equipment foundations or service tie-ins (excluding equipment commissioning)
- External works such as paving, walkways, drainage tie-ins, fencing, and landscaping
- Temporary traffic management, material handling, and safe access arrangements during construction
- Contractor management, environmental controls, and Occupational, Health and Safety supervision throughout the construction lifecycle

All construction activities must be carried out in accordance with the mitigation and monitoring measures outlined in this Construction-ESMP (C-ESMP), as well as all applicable environmental, social, health, safety, labour, and heritage legislation and lender standards. CLS remains responsible for full compliance with the C-ESMP and ensuring that all subcontractors and personnel adhere to the required management measures.

1.3 Aim of the C-ESMP

This C-ESMP has been developed for use by the Proponent, its contractors, sub-contractors and service providers during the Construction Phase. It is based on the findings of the Environmental and Social Impact Assessment (ESIA) which is currently under development. The Environmental and Social (E&S) process has, however, been completed and its outcomes have been used to inform the measures contained in this ESMP. The ESMP is designed to ensure compliance with the relevant national legislation and relevant international standards.

The C-ESMP demonstrates Biovac's commitment to E&S sustainability, which extends to all contractors, sub-contractors, and the broader project supply chain. It is essential that CLS and all subcontractors and service providers fully understand and adhere to the C-ESMP requirements, including the mitigation, monitoring, and reporting obligations it imposes.



Note: The effectiveness of the C-ESMP is limited by the level of adherence to the conditions set forth in the C-ESMP by the Proponent, the contractor, sub-contractors and service providers. It is assumed that compliance with the C-ESMP will be monitored and audited as set out in this document. It is also assumed that the C-ESMP will be included in contracts to ensure the requirements detailed herein are legally binding.

1.4 Objectives of the C-ESMP

This ESMP has the following objectives:

- To ensure compliance with regulatory authority stipulations and guidelines which may be local, provincial, national and/or international.
- To outline functions and responsibilities of responsible persons.
- To state standards and guidelines, which are required to be achieved in terms of environmental legislation and requirements of lenders.
- To outline mitigation measures and environmental specifications which are required to be implemented for the construction phase of the project to minimise the extent of environmental impacts, and to manage environmental impacts associated with the proposed project.
- To identify measures that could optimise beneficial impacts.
- To prevent long-term or permanent environmental degradation.
- To establish a method of monitoring and auditing environmental management practices during the construction phase.
- Detail specific actions deemed necessary to assist in mitigating the environmental impact of the project.
- Ensure that the safety recommendations are complied with.
- Propose mechanisms for monitoring compliance with the ESMP and reporting thereon.
- Specify time periods within which the measures contemplated in the ESMP must be implemented, where appropriate.
- To provide an environmental awareness plan.
- Provide rational and practical environmental conditions / requirements to:
 - Minimise disturbance of the natural environment.
 - Ensure water resource protection.
 - Prevent or minimise all forms of pollution.
 - Protect indigenous flora and fauna.
 - Prevent soil and sand erosion and facilitate the re-vegetation of affected areas.
 - Maintenance of newly re-vegetated areas.
 - Restrict noise disturbance.
 - Ensure compliance with all applicable laws, regulations, standards and guidelines for the protection of the environment
 - Adopt the best practical means available to prevent or minimise adverse environmental impacts.
 - Develop waste management practices based on prevention, minimisation, recycling, treatment or disposal of waste; and
 - Train the Proponent, its employees and contractors regarding their environmental obligations.

The ESMP may be considered a “live document” that should be continually updated, as and when required.



2.0 Legal and Regulatory Framework

The C-ESMP has been prepared in alignment with applicable international, national, and local environmental, social, and health and safety standards and relevant local legislation. These include:

2.1 National Legal Requirements

The main national legislation applicable to environmental, social, and occupational health and safety aspects includes:

- National Environmental Management Act (NEMA, Act 107 of 1998).
- National Environmental Management: Waste Act (Act 59 of 2008).
- National Environmental Management: Air Quality Act (Act 39 of 2004).
- Occupational Health and Safety Act (Act 85 of 1993).
- Labour Relations Act (Act 66 of 1995)
- Basic Conditions of Employment Act (Act 75 of 1997).
- Construction Regulations (OHS Act); and
- Municipal by-laws (such as *inter alia* the Air Quality Management By-law, Noise Control Regulations, Traffic Management and Road Safety By-law, Community Fire Safety By-law Wastewater Management By-Law and Waste Management By-law)

2.2 International Requirements

To ensure that all environmental, social, health and safety requirements are met during the construction phase, this ESMP has been developed with reference to the following standards and guidelines:

- IFC Performance Standards on Environmental and Social Sustainability (2012).
- EIB Environmental and Social Standards (2022);
- African Development Bank Group's Integrated Safeguards System (2023);
- WBG General Environmental, Health & Safety Guidelines (2007);
- WBG Environmental, Health and Safety Guidelines for Construction (2007); and
- Relevant International Labour Organization (ILO) Conventions, including core labour standards on forced and child labour, non-discrimination, freedom of association, and occupational health and safety.

3.0 Roles and Responsibilities

The roles and responsibilities associated with the implementation, oversight, and monitoring of this ESMP during the construction phase are presented in

Table 3-1 below. All human resources appointed to E&S functions must be suitably qualified with demonstrated competence and experience specific to the role and responsibilities outlined hereunder. Biovac, as the Proponent, retains ultimate accountability for Environmental and Social (E&S) performance throughout the construction phase, including ensuring that all appointed contractors, subcontractors, and personnel adhere to the requirements of this ESMP.



Table 3-1: Roles and Responsibilities

Role	Responsibility
Proponent Resources	
Proponent (Biovac)	• Appoint a Project Manager to assume ultimate project responsibility. • Approve the ESMP and allocate resources for implementation. • Ensure ESMP requirements are embedded in contracts and procurement. • Maintain overall accountability for E&S performance. • Enforce the E&S specification on site. • Report E&S performance to lenders (IFC/EIB/HDX and AfDB) as per financing agreements. • Notify lenders (IFC, EIB, HDX and AfDB) immediately in the event of any significant incident, including fatalities, life-threatening injuries, major spills, pollution events, injuries to members of the public, or Gender Based Violence (GBV) incidents. Oversee audits and corrective actions. • Arrange information meetings for or consults with stakeholders about the impending construction activities on a quarterly basis. • May suspend any or all works on site if the Contractor or his Sub-Contractor / Supplier fails to comply with the ESMP. • Maintain a register of complaints and queries by members of the public at the site office. • Ensure the ESMP is implemented as well as revised and updated, as and when required.
Environment, Health and Safety (EHS) Manager	• Oversee implementation of the ESMP throughout the construction phase. • Monitor compliance with the requirements of the E&S specification. • Ensure continuous improvement and adaptive management of environmental, social, and health & safety performance on site. • Liaise with the Contractor's Environmental Officer (EO) on environmental and social monitoring results, incidents, grievances, and corrective actions.



Role	Responsibility
	• Liaise with the Community Liaison Officer (CLO) on stakeholder engagement and grievances. • Liaise with the Contractor's Occupational Health and Safety (OHS) Officer regarding health and safety performance, incidents, and investigations. • Prepare monthly ESMP compliance reports based on engagement with CLO, EO & OHS Officer. • Request for, review and approve the Method Statements prepared by the Contractor. • Undertake regular site visits and ensure E&S and OHS specifications are implemented. • Review audit reports and take cognisance of the information/ recommendations contained therein. • Update ESMS risk register following internal and external audits (when necessary). • Comply with all applicable legislation. • Should the Contractor's EHS Manager fail to order the removal from the construction site of any person(s) and/or equipment in contravention of the specifications of the ESMP, the Proponent's EHS Manager must instruct the Contractor to do so. • Follow up on Engineering, Procurement and Construction (EPC) Contractor's Audit Action Plan and ensure close-out. • Chair monthly E&S site meetings with contractor resources and provide updates on performance, incidents, and corrective actions.
CLO	• Implement the Stakeholder Engagement Plan (SEP). • Operate and maintain the grievance mechanism (acknowledgement within 48 hours; resolution within 14 days). • Issue advance notifications to affected communities regarding disruptive activities (e.g. noise, dust, traffic). • Document stakeholder engagement activities, grievances, and feedback loops and report to the Proponent Project Manager and EHS Manager. • Report social performance, incidents, and corrective actions to the Proponent- and Contractor's EHS Managers.



Role	Responsibility
	- Chair quarterly stakeholder engagement meetings and ensure that minutes, attendance registers and action items are documented and submitted to the Proponent EHS Manager - Organise and prepare E&S-related monitoring for presentation to stakeholders.
Contractor Resources¹	
EHS Manager	- Be fully conversant with the ESMP. - Supply method statements timeously for all activities requiring special attention as specified and / or requested by the Proponent, Environmental Officer and/or Engineer during the duration of the Contract - Appoint suitably qualified and experienced EO and separate OHS Officer. - Ensure subcontractors comply with ESMP.² - Provide appropriate resources - budgets, equipment, personnel and training - for the effective control and management of the E&S risks associated with the construction of the development. - Ensure that s/he informs the Proponent timeously of any foreseeable activities which will require input from the Proponent to ensure compliance with the ESMP. - Maintain a register of environmental training for site staff and sub-contractor's staff for the duration of the contract. - Communicate and liaise frequently and promptly with the Proponent and their appointed representatives to ensure effective, proactive E&S management with the overall objective of preventing or reducing negative environmental impacts while enhancing positive environmental impacts. - The Contractor will conduct all activities in a manner that minimises disturbance to the natural environment as well as directly affected residents and the public in general.

¹ Note: Each role listed refers to an individual position.

² Note: Sub-contractors are fully subject to the same ESMP requirements, Grievance Redress Mechanism (GRM), Code of Conduct, and associated disciplinary measures as with the main contractor.



Role	Responsibility
	• Submit monthly E&S performance reports (including KPIs, incidents, and grievances) to the Proponent EHS Manager. • Order the removal from the construction site of any person(s) and/or equipment in contravention of the specifications of the ESMP. • Develop an Audit Action Plan and close-out findings related to audits. • Provide regular updates to the Proponent's EHS Manager on the close-out of any findings. • Attend monthly E&S meetings.
EO³	• Be fully conversant with the ESMP. • Ensure the documentation of the state of the site prior to construction activities commencing. This documentation will be in the form of photographs or video record. • Compilation of Method Statements that will specify how environmental aspects will be managed in line with the requirements of the ESMP, and where relevant environmental best practice and how the Contractor will practically ensure that the objectives of the ESMP are achieved • Implement day-to-day E&S management measures on site. • Conduct site inspections, monitoring, and toolbox talks related to E&S risks. • Convey the contents of this ESMP to the construction site staff and discuss the contents in detail with the Contractor. • Maintain records of training, inspections, and corrective actions. • Take appropriate action if the specifications contained in the ESMP are not followed. • Monitor and verify that E&S impacts are kept to a minimum, as far as possible. • Attend monthly E&S meetings.
OHS Officer	• Implement the site-specific OHS Plan in line with the ESMP and legal requirements. • Conduct daily safety inspections, risk assessments, and toolbox talks. Investigate incidents, near misses, and unsafe conditions and implement corrective actions.

³ The contractor may only appoint a dual-function HSE officer to the role of Environmental Officer if the resource has an environmental qualification, or as a minimum has attended courses that includes compliance with NEMA.



Role	Responsibility
	• Maintain OHS records, permits, and training registers. • Report OHS performance, incidents, and corrective actions to the Proponent- and Contractor's EHS Managers. • Attend monthly E&S meetings. • Implement and comply with the Emergency Preparedness and Response Plan.
Independent Resources⁴	
E&S Auditor	• To be appointed by the Proponent to undertake monthly E&S audits according to the requirements of the ESMP. • Be fully conversant with the ESMP. • Monitor the implementation of the ESMP during the construction phase. • Ensure site protection measures are implemented on site. • Monitor that the Proponent, Contractor, sub-contractors and service providers are in compliance with the ESMP. • Conduct audits of the site according to the ESMP, and report findings to the Proponent and Lenders. • Recommend corrective action for any E&S non-compliance at the site. • Liaise with the Safety Agent regarding any OHS findings that may be relevant to IFC Performance Standards 2 and 4 respectively. • Maintain Corrective Action Register (CAR). • Attend monthly E&S site meetings.
Safety Agent	• To be appointed by the Proponent to undertake OHS audits according to the requirements of the OHS Plan and local legislative requirements. • Be fully conversant with the OHS Plan. • Monitor the implementation of the OHS Plan during the construction phase. • Ensure OHS measures are implemented on site. • Monitor that the Proponent, Contractor, sub-contractors and service providers are in compliance with the OHS Plan. • Conduct audits of the site according to the OHS Plan and report findings to the Proponent.

⁴ Note: Each role listed refers to an individual position.



Role	Responsibility
	Recommend corrective action for any E&S non-compliance at the site. • Liaise with the E&S Auditor regarding any OHS findings that may be relevant to IFC Performance Standards 2 and 4 respectively. • Attend monthly E&S site meetings.

4.0 Training and Environmental Awareness

It is important to ensure that the Contractor has the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and on-going minimisation of environmental harm.

Training needs must be identified based on the available and existing capacity of site personnel (including the Contractors, Sub-contractors and Service Providers) to undertake the required ESMP management actions and monitoring activities.

It is vital that all personnel are adequately trained to perform their designated tasks to an acceptable standard.

The environmental training is aimed at:

- promoting environmental awareness.
- informing the Contractor of all environmental procedures, policies and programmes applicable.
- providing generic training on the implementation of environmental management specifications; and
- providing job-specific environmental training to understand the key environmental features of the construction site and the surrounding environment.
- ensuring personnel understand and adhere to all approved method statements relevant to their tasks.

providing training on the correct selection, use, care and limitations of Personal Protective Equipment (PPE) to ensure safe and compliant working practices. All contractors and subcontractors must receive compulsory E&S induction training prior to accessing the site. Training will consist once off induction training, weekly toolbox talks and targeted sessions related to corrective actions during the construction phase, when deemed necessary. In addition to training, general environmental awareness must be fostered among the project's workforce to encourage the implementation of environmentally sound practices throughout its duration. This ensures that E&S incidents are minimised and environmental compliance maximised.

5.0 Grievance Redress Mechanism

A Grievance Redress Mechanism (GRM) shall be implemented during the Construction Phase to enable workers and communities to raise concerns, complaints, or grievances related to environmental, social, labour, health, safety, or security matters associated with the Project. The GRM is a key component of the Project's Environmental and Social



Management System (ESMS) and is aligned with IFC Performance Standards, in particular IFC PS2 (Labour and Working Conditions) and IFC PS4 (Community Health and Safety).

5.1 Worker Grievance Redress Mechanism

The Contractor is required to establish and implement a Worker Grievance Redress Mechanism applicable to all workers engaged on the Project, including subcontractor and temporary workers. The Worker GRM shall:

- Be consistent with the requirements of IFC Performance Standard 2 and AfDB Integrated Safeguards System Operational Safeguards 2;
- Be communicated clearly to all workers during induction and through ongoing awareness activities;
- Allow for anonymous reporting of grievances;
- Include measures to ensure confidentiality and protection against retaliation for workers raising grievances;
- Define clear procedures, responsibilities, and timeframes for grievance acknowledgement, investigation, and resolution; and
- Maintain records of grievances received, actions taken, and outcomes.

Subcontractor workers shall have access to the Contractor's Worker GRM. Where grievances cannot be resolved at Contractor level, or where grievances raise serious concerns (including labour rights violations, health and safety risks, or GBV/Sexual Exploitation and Abuse allegations), these shall be escalated to Biovac through the Proponent's EHS Manager in accordance with defined escalation procedures.

5.2 Community Grievance Redress Mechanism

A Community GRM, managed by the Community Liaison Officer (CLO), shall be implemented to receive and manage grievances from affected communities and external stakeholders. The Community GRM shall:

- Be consistent with the AfDB Integrated Safeguards System Operational Safeguards 2;
- Be accessible and free of charge;
- Allow for confidential and anonymous submissions where required;
- Acknowledge grievances within 48 hours and aim to resolve them within 14 days;
- Maintain a grievance register and report trends and outcomes through regular E&S reporting.

5.3 Oversight and Reporting

Biovac retains overall oversight of the Worker and Community GRMs and shall monitor their effectiveness through audits, reporting, and engagement with the Contractor and CLO. GRM performance, trends, unresolved grievances, and escalation cases shall be included in monthly E&S reports and reviewed during E&S coordination meetings.



6.0 Reporting Procedures

6.1 Site Documentation

The following documentation must be kept on site to record compliance with the ESMP:

- An Environmental File which includes (copies of):
 - C-ESMP;
 - Contractor ESMP
 - Environmental Policy of the Main Contractor (signed);
 - Environmental Emergency Preparedness and Response Plan (including Spill Contingency Plan);
 - Environmental Method Statements.
 - Environmental Non-conformance Reports (NCR's).
 - Incidents Register.
 - Communications Register – including records of complaints, also minutes and attendance registers of stakeholder engagement.
 - Training register.
 - Monitoring results – including waste register (together with supporting waste disposal documentation), dust suppression register (abstraction register/ tally sheet), dust fallout monitoring reports, noise monitoring reports, water quality monitoring reports, site inspection reports, and audit reports (internal and external together with audit action plans and evidence of close-out), where required.
 - Material Safety Data Sheets (MSDSs) for hazardous substances stored on site.
 - Inventory of Hazardous Substances stored on site.
 - Waste disposal documentation including:
 - Waste manifest documents for hazardous waste (complete with signatures);
 - Safe Disposal Certificates (SDCs) for hazardous waste;
 - Weighbridge receipts from a licensed landfill for general waste;
 - Sewerage waste disposal receipts from local municipal wastewater treatment works.
 - Notification of Emergencies or Incidents, including Incident Reports and associated Corrective Action Reports.
 - Chance Finds Protocol.

The Environmental File may be maintained as an electronic copy; however, there needs to be evidence that E&S issues identified have been communicated to site staff to effect close-out.



6.2 Method Statements

It is a statutory requirement to ensure the wellbeing of employees and the environment. To allow the mitigation measures in this document to be implemented, task-specific method statements must be developed for all activities that meet defined risk thresholds.

A method statement is required for any activity that presents elevated E&S or OHS risk. At a minimum, method statements must be prepared for the following categories of work:

6.2.1 High-risk construction activities

These include, but are not limited to:

- Work at height;
- Lifting operations and crane activities
- Excavation and trenching
- Confined space entry
- Hot works

6.2.2 Activities with significant potential environmental impacts

- Earthworks and bulk excavation
- Vegetation clearance
- Work near watercourses, stormwater systems or drainage lines
- Handling, storage or use of hazardous materials

6.2.3 Activities involving community health and safety risks

- Traffic management near public roads or pedestrian routes
- Crane operations near public areas
- Any works adjacent to community facilities or high-footfall areas

Each method statement must include:

- Type of construction activity;
- Timing and location of the activity;
- Construction procedures;
- Permit to work procedures;
- Materials and equipment to be used;
- Transportation of the equipment to / from site;
- How equipment/material will be moved while on site;
- Location and extent of construction site office and storage areas;
- Identification of impacts that might result from the construction activity;
- Methodology and/or specifications for impact prevention / containment;
- Methodology for environmental monitoring;



- Emergency/disaster incident and reaction procedures (required to be demonstrated); and
- Rehabilitation procedures and continued maintenance of the impacted environment.

The Contractor remains accountable for compliance with approved method statements. All method statements and revisions must be retained on file and made available to the Proponent's EHS Manager for review.

As a minimum the following Method Statements will be required to be generated for the construction phase:

- Spoil management;
- Dust management;
- Environmental awareness training;
- Environmental monitoring;
- Erosion control;
- Fire, hazardous and/or poisonous substances;
- Concrete management
- Fuels and fuel spills (may form part of the item above);
- Storage, handling and decanting of diesel (may form part of the item above);
- Personnel, public and animal safety;
- Rehabilitation of modified environment(s);
- Solid and liquid waste management;
- Sources of materials (including material for fill, other materials and equipment);
- Top-soil management;
- Stormwater Management;
- Heritage (Chance Finds);
- Traffic Management (including road maintenance, where required) and
- Wash areas.

The contractor may consolidate the above-mentioned topics into stand-alone method statements under a different name.

Method statements must be approved by the Proponent's EHS Manager (or else a delegated responsible person).

7.0 Emergency Preparedness and Response

Emergency preparedness and response measures shall be implemented for the Construction Phase to ensure effective and timely response to environmental, social, health and safety incidents, including fires, spills, medical emergencies, traffic incidents, extreme weather events, and other unplanned events that may pose risks to workers, the community, or the environment. Emergency preparedness and response is a key component of the Biovac's Environmental and Social Management System (ESMS) and aligns with IFC



Performance Standards, EIB Environment and Social Standards AfDB AfDB Integrated Safeguards System and GIIP.

7.1 Emergency Preparedness and Response Plan

The Contractor shall develop, implement, and maintain a site-specific Emergency Preparedness and Response Plan (EPRP) prior to the commencement of construction activities. The EPRP shall be proportionate to the Project risks and shall be reviewed and updated throughout construction. The EPRP shall, at a minimum, address:

- Fire prevention and response;
- Hazardous material and fuel spill response;
- Medical emergencies and first-aid response;
- Traffic incidents involving construction vehicles;
- Severe weather events (e.g. high winds, heavy rainfall, heatwaves);
- Security-related incidents where relevant; and
- Incident notification, escalation, and communication procedures.

7.2 Roles and Responsibilities

Table 7-1: Emergency Preparedness and Response Plan Roles and Responsibilities

Role	Responsibility
Proponent Resources	
EHS Manager	• Retain overall oversight of emergency preparedness and response arrangements; • Review and approve the Contractor's EPRP; • Ensure coordination between emergency response arrangements, project governance, and site security; and • Ensures that emergency risks affecting community health and safety are appropriately managed.
CLO	• Support communication with surrounding communities, where relevant, during emergency events. • Manage external communications and grievance follow-up arising from emergency incidents, as required.
Contractor Resources	
EHS Manager/OHS Officer	• Develop, implement, and maintain the site-specific EPRP; • Ensure adequate emergency equipment, resources, and trained personnel are available on site; • Conduct emergency drills and training for workers and subcontractors; and



Role	Responsibility
	Ensure subcontractors comply with emergency preparedness and response requirements.

7.3 Coordination and Communication

Clear coordination procedures shall be established between the Contractor and Biovac to ensure effective communication and escalation during emergency events. All significant incidents shall be reported to Biovac in accordance with the ESMP incident reporting procedures.

The Contractor shall ensure coordination with relevant external emergency services, including local fire services, medical services, and other relevant authorities as appropriate. Emergency contact details shall be displayed prominently on site and included in induction and toolbox talks.

7.4 Training, Drills and Review

Emergency response training shall be provided to all workers during induction and refreshed periodically. Emergency drills (e.g. fire and spill response) shall be conducted regularly to test preparedness and effectiveness. Lessons learned from drills, incidents, or near-misses shall be used to update the EPRP through the Management of Change process.

8.0 Environmental and Social Management System – Risk Identification and Risk Register

8.1 Purpose and Alignment with Lender Requirements

This chapter presents the Environmental and Social Management System (ESMS) risk identification and risk register for the construction phase of the Project. It has been prepared in accordance with the requirements of IFC Performance Standard 1 (Assessment and Management of Environmental and Social Risks and Impacts), EIB Environmental and Social Standard 1 (Environmental and Social Impacts and Risks) and AfDB Integrated Safeguards System 1.

The purpose of this chapter is to:

- Identify and assess environmental, social, labour, occupational health and safety, and community health and safety risks associated with the construction phase;
- Assign inherent and residual risk ratings; and
- Define management and mitigation measures to reduce risks to acceptable levels consistent with international good practice.

8.2 Risk Identification Methodology

Environmental and social risks were identified using a structured, risk-based approach consistent with the IFC ESMS Risk Identification Tool and the ESIA compiled by (SLR Consulting 2026). The assessment considered:

- Planned construction activities and associated interfaces;
- Contractor and subcontractor activities;



- Applicable IFC Performance Standards, EIB Environmental and Social Standards, and WBG EHS Guidelines;
- Local environmental and social context, including proximity to surrounding communities and sensitive receptors; and
- Experience from comparable projects.

Each identified risk was assessed qualitatively in terms of likelihood and severity, resulting in an inherent risk rating prior to mitigation and a residual risk rating following implementation of the mitigation measures described in this ESMP.

8.3 ESMS Risk Register – Construction Phase

Table 8-1 below presents the ESMS Risk Register for the construction phase. The risk register is a live management tool and shall be reviewed and updated throughout the construction phase to reflect audit findings, incidents, grievances, or material changes to project activities.

8.4 Monitoring, Review and Continuous Improvement

This risk register is a live ESMS tool and will be:

- Reviewed periodically throughout the construction phase;
- Updated following audits, incidents, or material changes to project activities; and
- Used to inform corrective actions, management reviews, and lender reporting.

The Proponent's EHS Manager is responsible for updating the ESMS risk register following internal and external audits (when necessary), to ensure that environmental and social performance and residual risk levels are properly recorded and communicated to lenders in line with financing agreements and international good practice.

8.5 Management of Change

The ESMP and associated ESMS Risk Register are living documents and shall be reviewed and updated throughout the construction phase through a formal Management of Change (MoC) procedure to ensure continued effectiveness, regulatory compliance, and alignment with lender requirements and Good International Industry Practice (GIIP).

Updates to the ESMP and/or Risk Register shall be triggered where material changes occur, including but not limited to:

- A significant environmental, social, health or safety incident, accident or near-miss;
- Regulatory non-compliance, enforcement action, or fines;
- Findings arising from internal or external audits or inspections;
- Recurring grievances or material stakeholder concerns;
- Changes in construction methodology, sequencing, or scope;
- Prolonged construction delays or deviations from the approved programme;
- Introduction of new contractors, subcontractors, activities, or hazardous materials; or
- Changes to applicable legal requirements, lender standards, or permits.

Where a trigger event occurs, the Proponent's EHS Manager shall ensure that:

- The implications for environmental, social, health and safety risks are assessed;
- The ESMS Risk Register is reviewed and updated accordingly;



- Existing mitigation measures are revised or additional controls are identified where required;
- Relevant sections of the ESMP, Method Statements, and management plans are updated; and
- Changes are communicated to the Contractor, subcontractors, and relevant site personnel.

All changes shall be documented, version-controlled, and integrated into ongoing training, toolbox talks, and site communications to ensure effective implementation. This Management of Change process supports adaptive management and continuous improvement throughout construction.



Table 8-1: ESMS Risk Register

No.	Risk Category	Risk Description	Key Potential Impacts	Inherent Risk	Mitigation	Residual Risk	Responsible Party
1.	ESMS & Governance	Inadequate implementation of ESMP requirements	Regulatory and lender non-compliance; reputational risk	High	• Appointment of EO, EHS Manager and CLO • Contractor C-ESMP • Method statements for all high-risk tasks • Internal and external audits	Low	Proponent / Contractor
2.	ESMS & Governance	Inadequate record-keeping and reporting	Audit failure and inability to demonstrate compliance	Medium	• Maintenance of E&S Site File • Standardised reporting • Monthly E&S audits	Low	EO/ EHS Manager
3.	Stakeholder Engagement	Ineffective stakeholder engagement or grievance handling	Community grievances; delays; and reputational risk	Medium	• SEP implementation • GRM with defined timelines • CLO appointment and oversight	Low	Community Liaison Officer (CLO) / Proponent
4.	Labour & Working Conditions	Non-compliance with labour legislation or ILO standards	Worker grievances; legal and reputational risk	Medium	• Human Resource (HR) policies and compliant contracts	Low	Contractor/Proponent/CLO



No.	Risk Category	Risk Description	Key Potential Impacts	Inherent Risk	Mitigation	Residual Risk	Responsible Party
					- Worker Grievance Redress Mechanism (GRM) - Routine Audits		
5.	Labour & Working Conditions	Risks of GBV/ SEA	Social harm; reputational and lender concern	Medium	- Code of Conduct - GBV/SEA training - Confidential, accessible reporting mechanisms	Low	Contractor / Proponent CLO
6.	Occupational Health & Safety	Injuries or fatalities	Worker harm; project delays and legal action	High	- OHS Plan - Task Specific Risk Assessments - Personal Protective Equipment (PPE) provision - Toolbox Talks - OHS Audits	Medium	Contractor / Proponent/Occupational Health and Safety (OHS) Officer
7.	Community Health & Safety	Public exposure to construction hazards	Injury to public and community complaints	Medium	- Security fencing - Signage - Access Control - Advance community notifications	Low	Contractor/CLO



No.	Risk Category	Risk Description	Key Potential Impacts	Inherent Risk	Mitigation	Residual Risk	Responsible Party
8.	Traffic & Transport	Traffic accidents or congestion caused by construction vehicles	Public Safety risks and disruption to local traffic	Medium	- Traffic Management Plan - Trained Flagmen - Delivery Scheduling	Low	OHS Officer
9.	Greenhouse Gas (GHG) Emissions	Inefficient generator operation	Increased GHG emissions and poor air quality	Medium	- Ensure generators are correctly sized to operate at 70-100% load - Maintain generators according to manufacturer requirements	Low	EO
10.	GHG Emissions	Emissions from long distance transport of construction materials	Increased carbon footprint	Medium	- Source construction materials as close to the site as possible - Maximise vehicle loads to reduce total trips	Low	EO/EHS Manager
11.	Air Quality (Dust)	Excessive dust generation	Nuisance; health impacts; complaints	Medium	- Dust Management Plan - Monitoring - Grievance response actions	Low	EO



No.	Risk Category	Risk Description	Key Potential Impacts	Inherent Risk	Mitigation	Residual Risk	Responsible Party
12.	Noise & Vibration	Excessive construction noise	Disturbance; noise complaints; reputational risk	Medium	- Noise Management Plan - Restricted hours - Monitoring per SANS 10103	Low	EO
13.	Soil & Groundwater	Fuel or chemical spills	Soil and groundwater contamination	High	- Bunded storage - Spill kits - Spill response training - Incident response procedure	Low	EO
14.	Hazardous Materials	Incorrect storage or handling of hazardous substances	Fire risk; injury and environmental contamination	High	- Bundling - SANS Signage - MSDS available - Fire equipment - Trained personnel	Low	EO/OHS Officer
15.	Waste Management	Improper waste handling or disposal	Pollution; regulatory non-compliance	Medium	- Waste Management Plan - Licensed disposal - Waste register - Weighbridge Receipts from landfill	Low	EO



No.	Risk Category	Risk Description	Key Potential Impacts	Inherent Risk	Mitigation	Residual Risk	Responsible Party
					• SDCs • Waste Manifest		
16.	Water Management	Sediment-laden runoff from excavations	Surface water pollution	Medium	• Erosion controls • Dewatering Management • Inspections	Low	EO
17.	Resource Efficiency	Inefficient use of fuel, water and materials	Increased emissions; resource wastage	Low	• Efficient equipment use • Water management • Training • Switch off idle equipment and enforce no-idling policy	Low	EO
18.	Security ⁵	Unauthorised access or theft	Safety incidents; asset loss and delays	Medium	• 24/7 Security • Controlled access • Coordination with South African Police Services (SAPS)	Low	Proponent/ OHS Officer

⁵ Biovac retains overall responsibility for site security, including oversight of the appointment and management of private security contractors, ensuring alignment with legal requirements, GIIP, coordination with the Contractor, and protection of community health and safety and worker rights.



No.	Risk Category	Risk Description	Key Potential Impacts	Inherent Risk	Mitigation	Residual Risk	Responsible Party
19.	Emergency Preparedness	Inadequate response to fires, spills or incidents	Escalated impacts; injuries	Medium	• Site Specific emergency Response Plan • Drills • Trained personnel • Coordination with emergency services	Low	OHS/EO
20.	Contractor Management	Sub-contractor non-compliance with ESMP	Increased E&S risk exposure	Medium	• ESMP contractual clauses • Regular supervision and audits	Low	Proponent/ Contractor
21.	Reputational	Recurrent incidents or unresolved grievances	Lender concern and reputational damage	Medium	• Monitoring • Reporting • Corrective Actions • Transparent communication	Low	Proponent
22.	Training and Capacity Building	Inadequate training and capacity building of personnel on ESMP, EHS, and social requirements	Non-compliance with ESMP, environmental/social incidents, unsafe working conditions, community complaints	High	• Conduct refresher training sessions (monthly) • Facilitate corrective action sessions (as required) • Carry out weekly toolbox talks	Medium	EO/EHS Manager/CLO



No.	Risk Category	Risk Description	Key Potential Impacts	Inherent Risk	Mitigation	Residual Risk	Responsible Party
					Incorporate issue-specific training for emerging E&S and OHS risks		
23.	Employment expectations	Elevated unrealistic community expectations about construction jobs and local procurement	Grievances; reputational harm; protest or obstruction risk; pressure on CLO	Medium	- Transparent recruitment communications - local hiring where feasible - Worker and Community GRMs - CLO engagement - Track local employment/Small, Medium and Micro Enterprises (SMMEs)	Low	CLO/Proponent/Contractor
24.	Waste management (camps and crews)	Increase general waste from construction crews/camps and littering	Nuisance; vermin; pollution and complaints	Medium	- Adequate bins - Scheduled removal - Daily housekeeping - Recycling - Inductions - No-dumping enforcement	Low	Contractor/EO



No.	Risk Category	Risk Description	Key Potential Impacts	Inherent Risk	Mitigation	Residual Risk	Responsible Party
25.	Soil erosion from exposed areas	Rain and wind erosion from open ground, stockpiles and temporary batters	Sediment transport; silted drains; off-site impacts	Medium	- Minimise cleared area - Stabilise stockpiles - Perimeter silt fencing - Stabilise slopes - Inspect after rainfall	Low	EO/ Contractor
26.	Weather related delays	High Intensity rainfall affecting trenches, materials and access	Programme delays; safety hazards; stormwater pollution	Medium	- Weather monitoring - Protect excavations - Temporary drainage/over pumping with de-silting - Stand down protocols	Low	Contractor/OHS Officer/EO
27.	Workforce influx effects	Short term influx of workers/contractors into area	Local tensions; pressure on services' informal trading around gate	Low	- Code of conduct - Controlled access - Provide onsite facilities - CLO outreach - GRM for community concerns	Low	Contractor/CLO/Proponent



No.	Risk Category	Risk Description	Key Potential Impacts	Inherent Risk	Mitigation	Residual Risk	Responsible Party
28.	OHS (Heat Stress)	Increased ambient temperatures and heatwaves causing heat stress	Worker illness; incidents; productivity loss	Medium	- Heat Stress Management Plan - Rest, shade, water area available on site - Adjust hours - PPE adjustments - First-aid readiness	Low	Contractor/OHS Officer/EO
29.	OHS (During High Winds)	Strong winds increase dust and destabilise cranes/scaffolding/materials	Dust nuisance; falling objects; injuries; complaints	Medium	- Wind monitoring - Suspend high risk operations above thresholds - Secure materials - Enhanced dust suppression	Low	Contractor/OHS Officer/EO
30.	Stormwater management	Intense rainfall exceeds temporary controls, causing flooding/overflow	Sediment pollution; trench failure; damage; delays	Medium	- Temporary bypasses - Clear drains - Emergency pumps - Sandbags - Forecast planning	Low	EO/Contractor



No.	Risk Category	Risk Description	Key Potential Impacts	Inherent Risk	Mitigation	Residual Risk	Responsible Party
31.	Material Management	Rain/Heat/UV degrade stored construction materials	Material waste; rework; delays; cost overruns	Medium	- Covered/ventilated storage - Weatherproof stockpiles - Inspections	Low	Contractor/EO



9.0 Audit

To ensure effective implementation of the ESMP and compliance with environmental, social, and health and safety requirements, compliance audits will be conducted throughout the construction phase. These audits will verify that all mitigation measures are applied correctly and that E&S risks are managed appropriately.

9.1 Internal Audits

The implementation of mitigation measures set out in this ESMP will be verified through a structured programme of inspections and audits. Routine internal site inspections shall be undertaken daily (unless otherwise specified in the ESMP) by the relevant EO Officer and/or OHS Officer to verify day-to-day compliance with the ESMP requirements. Findings from these inspections shall be recorded using standardised inspection checklists and protocols, supported by photographic evidence where relevant.

In addition, monthly internal audits shall be conducted by the EHS Manager to verify the effectiveness of mitigation measures and the level of compliance achieved. Records of all inspections and audits shall be retained on file. The EHS manager shall compile and submit an annual ESMP performance report for the lenders, summarising compliance status, trends, and corrective actions implemented. It is recommended that a grading or rating system be applied to assess compliance levels consistently.

9.2 External Audits

The Proponent shall be responsible for the appointment of an independent external E&S auditor and a separate Safety Agent, as required by this ESMP. The appointed auditors shall be suitably qualified and experienced and shall be responsible for undertaking monthly compliance audits to verify adherence to the commitments, mitigation measures, and performance requirements set out in the ESMP, as well as applicable national legislation and international good practice. In addition, both auditors will play a role in the development of corrective actions and preventative actions.

9.3 Audit Methodology

An audit methodology, programme, and protocol shall be developed for internal and external audits. Auditing is an integral component of ESMP implementation and provides a basis to measure compliance, assess the effectiveness of mitigation measures, and identify opportunities for improvement.

The audit process shall follow four key steps:

1. Planning the audit
2. Conducting the audit
3. Producing audit findings, including measuring compliance and identifying non-conformances
4. Reporting audit findings for management action

All audit findings shall be subject to a root cause analysis to identify the underlying causes of non-compliance events. Management actions shall be implemented to address these underlying causes, and improvements shall be made prior to subsequent audits. This process supports corrective action, improved compliance, and prevention of recurrence.



Root cause analysis shall identify not only failures requiring correction, but also effective practices that promote compliance. This approach supports continual improvement and progression towards best practice environmental and social management.

Compliance with the conditions of the ESMP must be evaluated using the ratings defined in Table 9-1 below.

Table 9-1: ESMP Compliance Ratings

Rating	Definition
Compliance (C)	Condition or activity has been addressed / complied with.
Partial Compliance (PC)	Condition or activity has been partially addressed / complied with; however not all requirements were met.
Non-compliance (X)	Condition or activity has not been addressed / complied with.
Work In Progress (WIP)	Condition or activity is in the process of being addressed / complied with.
Required Later (RL)	Condition or activity only needs to be addressed / complied at a later stage.
Not Applicable (N/A)	Condition or activity is not applicable (reason to be specified).

9.4 Corrective Actions

The proponent will implement a formal non-compliance and corrective action tracking procedure for investigating cause and identifying corrective actions in response to accidents, environmental and/or social non-compliances.

Where corrective actions are deemed necessary, specific measures will be developed and captured in a CAP, with designated responsibility and timing and implemented. In this way, continuous improvement in performance would be achieved.

The proponent will be responsible for keeping records of corrective actions and for overseeing the modification of environmental or social protection procedures and/or training programmes to avoid repetition of non-conformances and non-compliances.



10.0 Environmental and Social Management Plan

10.1 Construction Phase

Table 10-1 below outlines the key impacts and corresponding mitigation measures identified for the project's construction phase. The objective of is to provide a structured framework for implementing these mitigation measures to address the identified environmental, social, health and safety impacts.

Table 10-1: ESMP for Construction Phase

No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
1.	Appointment of EHS Manager	Risk of non-compliance with ESMP	Appoint a designated EHS Manager who will: • Comply with the ESMP • Provide information on previous environmental management experience and company environmental policy in terms of the relevant forms contained in the Contract Document. • Supply method statements timeously for all activities requiring special attention as specified and / or requested by the Proponent, Environmental Officer and/or Engineer during the duration of the Contract	• IFC Performance Standard (PS) 1, PS2 • EIB Environmental and Social Standard (ESS) 1 and ESS 8 • AfDB Operational Safeguard (OS) 1	Contractor	Appointment prior to commencement of construction and implementation of mitigation measures



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
			• Develop and implement a C-ESMP aligned with this ESMP. • Appoint suitably qualified and experienced EO and OHS Officer. • Ensure subcontractors comply with ESMP • Provide appropriate resources - budgets, equipment, personnel and training - for the effective control and management of the E&S risks associated with the construction of the development • Ensure that he informs the Proponent timeously of any foreseeable activities which will require input from the Proponent to ensure compliance with the ESMP • Maintain a register of environmental training for site staff and sub-contractor's staff for the duration of the contract			



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
			- Communicate and liaise frequently and promptly with the Proponent and their appointed representatives to ensure effective, proactive E&S management with the overall objective of preventing or reducing negative environmental impacts while enhancing positive environmental impacts - The Contractor will conduct all activities in a manner that minimises disturbance to the natural environment as well as directly affected residents and the public in general - Submit monthly E&S performance reports (including KPIs, incidents, and grievances) to the Proponent EHS Manager - Order the removal from the construction site of any person(s) and/or equipment in contravention of the specifications of the ESMP			



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
2.	Appointment of EO	Risk of non-compliance with ESMP	Appoint a designated EO who will • Be fully conversant with the ESMP • Ensure the documentation of the state of the site prior to construction activities commencing. This documentation will be in the form of photographs or video record • Compile Method Statements that will specify how environmental aspects will be managed in line with the requirements of the ESMP, and where relevant environmental best practice and how the Contractor will practically ensure that the objectives of the ESMP are achieved • Implement day-to-day environmental and social management measures on site • Conduct site inspections, monitoring, and toolbox talks related to E&S risks.	• IFC PS1, PS2 • EIB ESS 1 and ESS 8 • AfDB OS 1	Contractor	Appointment prior to commencement of construction and implementation of mitigation measures throughout construction



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
			- Convey the contents of this ESMP to the construction site staff and discuss the contents in detail with the Contractor. - Maintain records of training, inspections, and corrective actions - Take appropriate action if the specifications contained in the ESMP are not followed - Monitor and verify that E&S impacts are kept to a minimum, as far as possible			
3.	Training and Capacity Building	Improves personnel capacity, ESMP compliance, workplace health and safety, and community engagement; minimal environmental footprint.	- Routine training - Incorporate issue specific training for emerging E&S and OHS Risks	- IFC PS1 and PS2 - AfDB OS 1,2 and 4 - WBG EHS Guideline Section 2.2 - ILO Convention 155 and 161 - OHS Act 85 of 1993 Section 8(1) and Section 8(2)(d)	As when required	EO/EHS Manager/CLO



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
4.	Maintain E&S Site File	Risk of poor record-keeping leading to audit failures, lender non-compliance, and inability to demonstrate ESMP implementation	- Establish and maintain a comprehensive E&S site file Include: - Inspection and monitoring records - Incident and non-conformance reports - Training attendance registers - Waste disposal dockets and permits - Grievance logs and resolutions - Environmental monitoring data (dust, noise, water quality)	- IFC PS1 - EIB ESS 1 - AfDB OS 1 - SA OHS Act 85 of 1993	EO	Continuous throughout construction; weekly updates; monthly verification.
5.	Grievance Logbook (Community and Workers)	Unresolved grievances leading to conflict, mistrust, or social tension	- Maintain an accessible, confidential, multi-channel Grievance Redress Mechanism (GRM) - Acknowledge grievances within 48 hours - Target ≥95% closure within 14 days.	- IFC PS1, PS2, PS4 - EIB ESS 8 - AfDB OS 1,2,4,10	CLO, EO and OHS Officer	Continuous



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
6.	Induction and Task Training	Inadequate training may lead to safety and E&S risk	- Deliver E&S inductions to workers prior to site access - Conduct weekly training for E&S and OHS - Track attendance for training sessions	- IFC PS1 and PS2 - WBG EHS General Guidelines Section 2.2 - SA OHS Act 85 of 1993 - AfDB OS 1,2 and 4	EO	Prior to and during the construction phase
7.	Topsoil stripping and Stockpiling	Loss of fertile soil, increased dust emissions, potential spread of weeds.	- Document volumes and locations - Stockpile in designated, signed areas; protect with covers or berms and seed to suppress dust and weeds - Maintain drainage away from stockpiles - Topsoil must be re-used for rehabilitation and landscaping purposes (only)	- IFC PS6 - AfDB OS 6 - WBG EHS General Guidelines Section 4.1 - NEMA: Biodiversity Act, 2004 (NEM:BA), including Alien and Invasive Species Regulations	EO	Prior to and during construction, as needed.
8.	Bulk excavations and dewatering	Potential sediment-laden runoff and minor soil disturbance	- Minimise sediment-laden runoff to prevent offsite impacts - Ensure soil disturbance is confined to the approved excavation footprint - Install silt fences and sediment traps along trenches and drainage lines	- IFC PS3 - AfDB OS 6 - WBG EHS General 4.1 - National Water Act 36 of 1998 (Sections 21 and 22)	EO	Continuous during excavation.



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
			- Dewatering activities may not be undertaken directly into municipal services (e.g., the storm-water system) without de-silting (such as dewatering through a geotextile silt sock) - Excess soil (spoil) may only be removed from site with an approved method statement			
9.	Fuel & Hazardous Materials Management	Soil and groundwater contamination; fire risk; public and worker safety	- Store all fuels, oils, chemicals, cement, epoxy, paints, shutter oils, and solvents in bunded areas (110% capacity) with impermeable floors. - Storage areas must be covered and be able to be secured (locked) - Appropriate SANS 1186 signage must be displayed. - Maintain spill kits within 10 m of all storage/use areas - Install and maintain fire extinguishers at all hazardous material locations	- IFC PS3 - AfDB OS 3 - WBG EHS General Guidelines, Sections 1.3, 2.2, and 4 - SA OHS Act 85 of 1993 (Regulations for Hazardous Chemical Substance) - City of Cape Town Community Fire Safety By-law, 2002 (as amended) - SANS 10087 (South African National Standard)	EO	Continuous during construction



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
			• Display emergency contact details at all storage/use areas • Train all personnel handling hazardous substances in spill response and safe handling procedures • Immediately report all spill incidents; investigate and implement corrective actions • Maintain an inventory of all hazardous substances and materials and ensure MSDS are in place for each product • Sub-contractors and service providers must present a list of the hazardous substances and materials that they intend to bring onto site to the contractor			
10.	Waste Management	Pollution and non-compliance; community nuisance; potential health and safety risks	• The contractor must provide a Waste Management method statement covering handling (including segregation), storage, transport and disposal via licensed facilities.	• IFC PS3 • AfDB OS 3 • WBG EHS General Section 1.6 • NEM: Waste Act 59 of 2008	EO	Continuous



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
			• Maintain waste registers • Verify transporter licences and disposal site permits • Prohibit burning and dumping	• City Integrated Waste Management By-law		
11.	Dust Control	Degraded air quality; nuisance to workers and surrounding community; complaints risk	• Develop Dust Management plan covering dust suppression measures (e.g. watering of exposed surfaces and access routes) appropriate to site conditions • Cover or stabilise loose materials and stockpiles • Ensure loads are covered during transport where applicable. • Install windbreaks where required near site boundaries or sensitive receptors • Enforce site speed limits and good housekeeping practices • Respond promptly to dust-related complaints and adjust controls as required	• IFC PS3 • AfDB OS 3 and 4 • WBG EHS General Guidelines Sections 1.1 and 5 • National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004), Section 1 (definition of air pollution including dust) and Section 32 (control of dust) • City of Cape Town Air Quality Management By-law (Dust Emissions & Nuisance Provisions)	EO	Continuous



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
			Tracking of mud must be prevented onto roads, particularly those immediately adjacent to the development. Where this has occurred, the mud must be cleared and taken back onto site for stockpiling			
12.	Vehicle/Truck Emissions & Idling	Local air pollution; increased GHG emissions; nuisance to nearby receptors	- Prohibit unnecessary idling and display no-idling signage at loading bays and site entrances. - Maintain vehicles according to Original Equipment Manufacturer (OEM) schedules - Optimise haul routes and delivery schedules to minimise travel time and reduce emissions - Conduct spot checks on idling behaviour and implement corrective actions - Materials should be sourced as close to the work front as possible to reduce transport	- IFC PS3 - AfDB OS 3 - WBG EHS General Guidelines Sections 1.1, 1.2 and 4 - National Environmental Management: Air Quality Act, 2004 (Sections 1 and 9) - City of Cape Town Transport/Traffic By-law (engine idling / emissions nuisance provisions)	EHS Manager/EO	Continuous



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
			distances and GHG emissions - For the transport of materials and equipment, the vehicle load should be maximised to increase fuel efficiency and reduce emissions. - Truck drivers should receive training on good driving practices to improve fuel economy and reduce carbon emissions			
13.	Noise and Vibration	Nuisance and potential health impacts on nearby communities	- Develop a Noise Management Plan, defining measures for minimising noise and vibration - Restrict noisy works to permitted hours (Mon–Fri 07:00–18:00, Sat 08:00–13:00, Sundays/public holidays prohibited) - Notify communities of disruptive activities in advance (72 hours before) - Maintain equipment in good working order to minimise noise	- IFC PS3 - AfDB OS 3 - WBG EHS General Guidelines Sections 1.7 and 4 - SANS 10103 - City of Cape Town Noise Control Regulations	Contractor, EO and CLO	Continuous during construction within permitted hours



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
			- Monitor noise levels at site boundaries to ensure they do not exceed 50 dB(A) during the day (07:00–18:00), in accordance with SANS 10103 and City Noise Control Regulations; investigate and rectify exceedances - Use engine covers when equipment is in operation			
14.	Traffic and Transport	Road safety incidents and congestion affecting community mobility	- Implement a Traffic Management Plan (TMP) covering signage, speed limits (< 10 km/h enforced on the whole site), trained flagmen, and safe pedestrian diversions - Stagger deliveries and optimise haul routes to reduce congestion - Record all traffic incidents, investigate root causes, and implement corrective actions. - Ensure signage is compliant with SARTSM	- IFC PS4 - AfDB OS 4 - WBG EHS General Guidelines Section 3.4 - City of Cape Town Traffic By-law, 2021 (traffic regulation and safety on public roads)	EHS Manager/EO	Continuous during construction



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
15.	Occupational Health and Safety	Worker injuries and occupational illness; regulatory non-compliance	- Implement an OHS Plan covering risk assessments, method statements, personal protective equipment (PPE), worker induction, and toolbox talks - Provide Construction personnel with PPE relevant for hazards on site, at no cost to its workers - Ensure that personnel employed are competent and fit to carry out the work they are intended to do - Verify that suitably trained first-aid personnel are always available on site - Establish incident reporting, emergency response procedures, and track Total Recordable Injury Rate (TRIR) and leading indicators. - Conduct routine OHS audits and enforce corrective actions promptly	- IFC PS2 - AfDB OS 2 - WBG EHS General Guidelines Sections 2.2, 2.7, 2.8, 2.9 - SA OHS Act 85 of 1993, Sections 8, 9, 20-21 and 24 - ILO Convention 155	Contractor, OHS Officer	Continuous



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
			• Monitor thermal environment and type of activities personnel are undertaking • Develop necessary emergency plans and procedures • Ensure that there is a grievance mechanism in place for personnel • Store first aid kits, eye flushes, spill kits and firefighting equipment on site at various points • Provide suitable seating area for personnel to use during breaks • Provide adequate access to toilets and wash basins for personnel • Place water points for personnel • Display emergency contact information on signage accessible to all site personnel and visitors • Develop a Heat Stress Management Plan including			



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
			○ Specific training on heat stress symptoms and prevention ○ Contingency plans for extreme heat events ○ Work/rest cycles, shaded rest areas, and more frequent breaks ○ Heat stress monitoring and provision of appropriate PPE			
16.	Labour & Working Conditions	Unfair labour practices; risk of GBV / SEA; unresolved worker grievances	• Ensure that a HR Policy and relevant procedures will be prepared • Prepare a Social Management Plan • Require compliant employment contracts • Prohibit child and forced labour	• IFC PS2 • EIB ESS 8. • AfDB OS 2 • ILO Core Conventions 87, 98, 29, 105, 138, 182, 100, 111) • ILO Convention 190 (harassment)	Proponent (HR), CLO	Continuous



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
			• Enforce equal remuneration and non-discrimination • Adopt and enforce a Code of Conduct addressing GBV/SEA • Provide confidential and anonymous grievance channels and worker protections • Maintain ongoing training on labour rights and grievance procedures • Prioritise hiring of local workers where qualified • Track local employment and provide basic skills training if required • Ensure that the Contractor provides and monitors anonymous grievance channels (e.g., hotline, suggestion boxes) • Assign GBV oversight roles to Biovac • Establish clear escalation procedures for GBV-related	• Basic Conditions of Employment Act 75 of 1997 • Labour Relations Act 66 of 1995		



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
			grievances to Proponent's senior management			
17.	Community Health & Safety	Public exposure to construction hazards; reputational risk	• Install fencing, lighting, signage and security cameras around footprint • Issue advance notices for disruptive works (72 hours prior) • Conduct awareness briefings with local stakeholders • Coordinate with South African Police Services (SAPS) and City Improvement District (CID) for security where needed • Maintain an incident log and implement corrective actions • 24/7 Security presence on site • 24/7 controlled access	• IFC PS4 • AfDB OS 4 • WBG EHS General Guidelines Section 3	Contractor / CLO/ EO	Continuous
18.	Resource efficiency (Energy,	Inefficient use of water, energy, fuel, and materials	• Apply resource-efficient construction practices, including the use of well-maintained and fuel-efficient	• IFC PS3 • EIB ESS 3 • AfDB OS 3	Contractor/EO	Throughout construction



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
	Water, Materials)	during construction leading to unnecessary resource depletion, increased emissions, and avoidable environmental impacts	- plant and equipment and avoidance of unnecessary idling - Optimise water use through leak prevention and the use of non-potable water where feasible (e.g. for dust suppression) - Minimise material losses through accurate material estimation and reuse of suitable excavated material on site where feasible - Segregate materials to enable reuse and recycling where practicable - Source materials locally where feasible to reduce transport-related emissions - Implement good housekeeping practices and awareness training for workers on resource efficiency.	WBG EHS General Guidelines Sections 1.2,1.4,1.6		
19.	Construction Camp / Crew Waste	Litter, nuisance and vermin	- Provide bins and scheduled removals - Daily housekeeping	- IFC PS3 - AfDB OS 3 - WBG EHS 1.6	Contractor/EO	Continuous



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
			- Segregate recyclables - Conduct worker inductions - Enforce no-dumping (spot checks)	- NEM: WA - City of Cape Town By-Laws		
20.	Employment expectations	Inflated community job or procurement expectations	- Communicate recruitment process/criteria - Prioritise local hiring where feasible - Maintain worker and community GRM - CLO to manage expectations - Track and report local jobs/SMMES	- IFC PS 2 - EIB ESS 2 and 8 - AfDB OS 2 and 8	CLO/Proponent /Contractor	Continuous
21.	Soil Erosion from Exposed Areas	Sediment transport; silted drains	- Minimise exposed areas/time - stabilise stockpiles (covers/seed) - perimeter silt fencing & inlet protection - stabilise temporary slopes - inspect & maintain after rainfall	WBG EHS 4.1	EO/Contractor	Continuous, after rainfall events



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
22.	Weather related delays	Programme delays; safety hazards; stormwater pollution	- Weather monitoring and look-ahead - Protect excavations - Temporary drainage and over-pumping with de-silting (socks/bags) - Stand-down protocols - Seasonal updates to method statements	- IFC PS 1,3 and 4 - EIB ESS 1,3 and 9 - AfDB OS 1,3 and 4 - WBG EHS 4.1	Contractor / OHS Officer / EO	Continuous; before/after storms
23.	High Wind Events	Dust plumes; falling objects; crane/scaffold risks	- Daily wind checks - Suspend high-risk lifts above thresholds - Secure materials/stockpiles - Enhance dust suppression during windy conditions.	- IFC PS 1,3 and 4 - EIB ESS 1,3 and 9 - AfDB OS 1,3 and 4 - WBG EHS 4	Contractor / OHS Officer / EO	Continuous; wind-triggered
24.	Stormwater Overload & Localised Flooding	Flooding; overflow; damage	- Temporary bypasses - Frequent clearing of drains/inlets - Keep pumps & sandbags on-site 48-hour forecast checks and readiness	- IFC PS 1,3 and 4 - EIB ESS 1,3 and 9 - AfDB OS 1,3 and 4 - WBG EHS 4.1 - City Stormwater By-law	EO / Contractor	Continuous; pre- and post-rainfall



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
25.	Climate-Driven Material Degradation	Waste & rework from rain/heat/UV	- Covered/ventilated storage - Weather-proof stockpiles - Daily checks for moisture-sensitive materials (e.g., cement).	- IFC PS3 - EIB ESS 3 - AfDB OS 3 - WBG EHS 1.4	Contractor / EO	Continuous
26.	Emergency Preparedness	Escalated impacts due to poor response	- Maintain Emergency Response Plan - Conduct drills (fire/spill) - Verify equipment (alarms/extinguishers/hydrants/spill kits) monthly.	- IFC PS4 - EIB ESS 9 - AfDB OS 4 - WBG EHS 3	OHS Officer / EO	Continuous
27.	Heritage Management	Damage, disturbance or loss of archaeological, historical, palaeontological or cultural heritage resources during excavation or earthworks	- Implement a Chance Finds Procedure (CFP) applicable to all excavation and ground-disturbing activities. - If any heritage item is uncovered (artefacts, bones, fossils, structures): - Stop work immediately in a 15–20 m radius.	- IFC PS8 - National Heritage Resources Act (Act 25 of 1999) - South African Heritage Resources Agency (SAHRA) guidelines	Contractor / EO / Heritage Specialist (as needed)	Continuous



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
			○ Secure and cordon off the area. ○ Do not move or handle the find. ○ Contractor notifies EO within 1 hour. ○ EO notifies Heritage Specialist and Proponent. ○ Heritage Specialist assesses significance and advises on next steps. ○ Resume work only when written clearance is provided. ● Train workers and machine operators on identifying potential heritage material.			



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
			• Include CFP in toolbox talks and inductions. • Keep a register of all heritage finds, if any.			
28.	Rehabilitation and Reinstatement of Disturbed Areas	Degradation of disturbed areas, including exposed soil, temporary works areas, stockpile zones, and landscaped or paved areas, resulting in erosion, dust generation, visual impacts, and potential stormwater contamination if not properly reinstated.	• Rehabilitate and reinstate all areas disturbed during construction activities (including excavations, stockpiles, temporary access routes, laydown areas and service trenches) as soon as practicable following completion of works in those areas. • Remove temporary construction materials, waste, surplus spoil, and equipment from rehabilitated areas. • Stabilise exposed surfaces through compaction, topsoil replacement, vegetation, paving, or other appropriate surface	• IFC PS 3 and 6 • AfDB OS 3 • NEMA (Act 107 of 1998)	Contractor/EO/ EHS Manager	As required during construction; following completion of works in disturbed areas



No.	Aspect	Environmental and Social Impact	Mitigation Measures	Applicable IFC, EIB, WBG/ ILO Standards and or South African Legislation	Responsibility	Timing
			treatments to prevent erosion and dust generation. • Ensure that reinstated areas do not impede stormwater drainage or create ponding or erosion risks. • Maintain rehabilitated areas until they are stable and functioning as intended. • Final site rehabilitation associated with decommissioning will be addressed under a separate closure or decommissioning plan, where applicable.			



10.2 Monitoring Plan

Table 10-2 below presents the Environmental and Social Monitoring Plan to be implemented during the construction phase. The monitoring, auditing, and reporting framework has been developed to ensure effective implementation and verification of all mitigation measures.

Table 10-2: Construction Environmental and Social Monitoring Plan

No.	Aspect	Target	Key Performance Indicator	Measure/Monitoring Method	Frequency	Reporting	Responsibility
1.	Appointment of EHS Manager	Full compliance with ESMP, effective E&S management, trained staff, timely reporting, and minimal environmental/community impacts	Number of: - Non-compliances - Incidents - Grievances - Training sessions conducted - Method statements submitted - Corrective actions implemented - Resource allocation adequacy	- Site inspections - Internal audits - Training registers - Training material - Incident logs - Grievance logs - Method statement reviews - Monthly E&S performance	Prior to construction continuous during construction	Monthly Internal E&S Audit Report	Proponent / EHS Manager
2.	Appointment of EO	Effective day-to-day management of environmental and social	Number of: - Site inspections - Toolbox talks delivered	- Site inspections - Attendance records	Daily / Weekly / As required	Monthly Internal E&S Audit Report	Proponent / EO



No.	Aspect	Target	Key Performance Indicator	Measure/Monitoring Method	Frequency	Reporting	Responsibility
		risks, compliance with ESMP, proper site documentation, trained staff, and timely corrective actions	- Method statements prepared - Incidents/non-compliances recorded and resolved - Construction documentation completed - Training and corrective action records maintained - EO present on site as required	- Method statement reviews - Monitoring logs - Training registers and material - Incident reports - Photographs			
3.	Training and Capacity Building	Improve personnel capacity, ESMP compliance, workplace health and safety, and community engagement; minimal	- Number of: - Refresher training sessions conducted - Corrective action sessions held - Toolbox talks delivered	- Training attendance registers - Toolbox talk logs - Session reports - Corrective action records	Daily / Weekly / As required	Monthly Internal E&S Audit Report	EHS Manager, EO, OHS officer



No.	Aspect	Target	Key Performance Indicator	Measure/Monitoring Method	Frequency	Reporting	Responsibility
		environmental footprint	Emerging E&S and OHS issues in training	Issue specific training documentation			
4.	E&S Site File	Complete, accurate construction E&S documentation	≥95% completeness of all required documents (logs, audits, permits, training records)	Ensure file consists of: - ESMP - Environmental Policy of the Main Contractor (signed) - Environmental Emergency Preparedness and Response Plan (including Spill Contingency Plan) - Environmental Method Statements - Environmental NCR's - Incidents Register	Continuous; formal review weekly	Monthly Internal E&S Audit Report	EO / Contractor / Proponent



No.	Aspect	Target	Key Performance Indicator	Measure/Monitoring Method	Frequency	Reporting	Responsibility
				• Communications register • Monitoring results • MSDSs • Inventory of Hazardous Substances stored on site • Waste disposal documentation • Notification of Emergencies or Incidents, including Incident Reports and associated Corrective Action Reports • Chance Finds Protocol			
5.	Grievance Logbook (Community and Workers)	Timely grievance resolution;	• All grievances acknowledged within 48 hours	• Review of grievance log entries and	Continuous; formal review monthly	Monthly Internal E&S Audit Report	CLO/ Proponent



No.	Aspect	Target	Key Performance Indicator	Measure/Monitoring Method	Frequency	Reporting	Responsibility
		transparent process	• ≥95% of grievances closed within 14 days • Complex cases escalated as required	closure timelines • Audit of acknowledgement and resolution records • Verification of published summaries and escalations			
6.	Induction and Task Training	Ensure all construction personnel are trained in E&S requirements and ongoing refresher talks	• 100% of construction personnel receive induction training • All personnel receive refresher training as required	• Attendance registers • Review of training materials and session records	Monthly	Monthly Internal E&S Audit Report	EO
7.	E&S Meetings	Ensure coordinated oversight of environmental, social, health and safety performance	• Monthly meeting held • Required attendees present (Proponent EHS Manager, Contractor EHS	• Meeting agenda and minutes • Attendance registers • Monthly KPI dashboard	Monthly	Monthly Internal E&S Audit Report	Proponent EHS Manager (Chair), Contractor EHS Manager, EO, OHS Officer, CLO



No.	Aspect	Target	Key Performance Indicator	Measure/Monitoring Method	Frequency	Reporting	Responsibility
			Manager, EO, OHS Officer, CLO, where relevant) - Review of incidents, significant incidents, grievances, KPIs, audits and CAP close-out - Actions logged and closed within agreed timeframes	- Review of incident and grievance logs - Review of internal/external audit findings - CAP tracker			
8.	Stakeholder Engagement Meetings	Ensure transparent communication with affected communities and stakeholders through regular engagement, presentation of monitoring results, and discussion of	- Quarterly meeting held - CLO chairs the meeting - Attendance by relevant Proponent and Contractor representatives - Presentation of E&S monitoring information (air	- Meeting minutes and attendance registers - Copies of monitoring reports presented (air, dust, noise) - Updated grievance log	Quarterly	Monthly Internal E&S Audit Report	CLO (Chair) and Proponent EHS Manager



No.	Aspect	Target	Key Performance Indicator	Measure/Monitoring Method	Frequency	Reporting	Responsibility
		community issues, grievances and mitigation measures.	quality, dust fallout, noise monitoring, traffic issues) - Documentation of grievances, concerns and commitments - Action items closed within agreed timeframes	Action item tracker			
9.	Site clearance and vegetation removal	No clearing outside approved footprint	- Clearing conducted strictly within approved site boundaries - No removal outside approved footprint - All cleared areas documented	- Site Inspection Audits - Photographic Records of cleared areas - Verification against approved site plan	As required during construction	Monthly Internal E&S Audit Report	EO/EHS Manager
10.	Topsoil stripping and Stockpiling	Preserve any existing topsoil and prevent erosion, dust,	Topsoil stripped only where present and to approved depth	- Site inspections and audits - Photographic records of	As required during site preparation; inspected weekly	Monthly Internal E&S Audit Report	EO/EHS Manager



No.	Aspect	Target	Key Performance Indicator	Measure/Monitoring Method	Frequency	Reporting	Responsibility
		and weed spread	• Stockpiles protected and stable • No sediment runoff or weed infestation from stockpiles	stripping and stockpiles			
11.	Bulk excavations and dewatering	Minimise sediment-laden runoff and prevent offsite impacts; ensure safe water management	• Sediment-laden runoff is controlled and confined on-site • Soil disturbance confined to approved excavation footprint • Dewatered water collected, settled, and safely reused or disposed	• Weekly site inspection reports • Review of sediment control measures (silt fences, traps) • Verification of water collection, treatment, and disposal	Weekly during excavation activities	Monthly Internal E&S Audit Report	EO/EHS Manager
12.	Fuel & Hazardous Materials Management	Prevent soil or water contamination, fire risk, and ensure safe handling of	• No spill incidents causing offsite contamination • 100% of hazardous substances stored in	• Review of Incident and spill logs • Weekly visual inspections of storage areas, bunds, spill	Weekly	Monthly Internal E&S Audit Report	EO/EHS Manager



No.	Aspect	Target	Key Performance Indicator	Measure/Monitoring Method	Frequency	Reporting	Responsibility
		hazardous materials	bunded/impermeable areas (110% capacity for diesel, oils, chemicals, cement, epoxy, paints, shutter oils, solvents) • Spill kits available within 10 metres of all storage/use areas • 100% of personnel handling hazardous substances trained in spill response • Immediate reporting of all spill incidents • Fire extinguishers installed and maintained at all hazardous material locations • No fire incidents	kits, fire extinguishers, and emergency contact postings • Verification of training records and MSDS availability • Documentation of immediate spill reporting and corrective actions			



No.	Aspect	Target	Key Performance Indicator	Measure/Monitoring Method	Frequency	Reporting	Responsibility
			Emergency contact details displayed at all storage/use areas				
13.	Waste Management	Prevent pollution and ensure compliant waste handling and disposal during construction	100% of waste removed by licensed transporters 100% of waste disposed of at licensed facilities - Waste segregated, stored and labelled correctly - No burning or illegal dumping incidents	- Site inspections and audits - Review of waste registers and disposal receipts - Verification of transporter licences and disposal facility permits - Waste manifest documents for hazardous waste (with signatures) - SDCs - Weighbridge receipts from a licenced landfill	Continuous	Monthly Internal E&S Audit Report	EO/EHS Manager



No.	Aspect	Target	Key Performance Indicator	Measure/Monitoring Method	Frequency	Reporting	Responsibility
				for general waste Sewerage waste disposal receipts from local municipal wastewater treatment works			
14.	Dust Control	Minimise dust generation and prevent nuisance to workers and surrounding community	- No visible excessive dust beyond site boundary - Dust suppression measures implemented when required - No unresolved dust-related complaints	- Site inspections (visual dust observations) - Review of dust suppression logs - Review of complaints register and response actions	Continuous; intensified during dry or windy conditions	Monthly Internal E&S Audit Report	EO/EHS Manager
15.	Vehicle/Truck Emissions & Idling	Minimise air pollution and GHG emissions; prevent nuisance to	- No unnecessary idling observed on site - Vehicles maintained to OEM schedules	Weekly site inspections and spot checks of vehicle idling	Continuous during construction; weekly spot checks; intensified	Monthly Internal E&S Audit Report	EO/EHS Manager



No.	Aspect	Target	Key Performance Indicator	Measure/Monitoring Method	Frequency	Reporting	Responsibility
		workers and surrounding community	- Materials transported efficiently to reduce trips and emissions - No unresolved complaints regarding vehicle emissions	- Review of vehicle maintenance records and fuel logs - Check delivery/haul schedules and vehicle load records - Review complaints register and corrective actions	during high traffic or dry/windy conditions		
16.	Noise and vibration	Minimise nuisance and health impacts to nearby communities	- No exceedances of noise limits at sensitive receptors outside permitted hours. - Complaints regarding noise are resolved promptly - Noise at sensitive receptors ≤ 50	- Community complaints register review - Review of noise logs and corrective actions	Continuous during construction weekly monitoring	Monthly Internal E&S and OHS Audit Report	EO/EHS Manager & OHS Officer



No.	Aspect	Target	Key Performance Indicator	Measure/Monitoring Method	Frequency	Reporting	Responsibility
			dB(A) during permitted hours				
17.	Traffic and Transport	Minimise road safety risks, congestion, and community disruption	- No traffic incidents attributable to project activities - Pedestrian access safely maintained - TMP measures (signage, flagmen, speed limits, haul routes) implemented - All incidents investigated and corrective actions taken	- Weekly site inspections of traffic and pedestrian control measures - Review of TMP implementation logs - Review of traffic incident reports and corrective action records - Coordination records with municipal authorities	Continuous during construction; intensified during peak traffic/delivery times	Monthly Internal E&S and OHS Audit Report	EO/EHS Manager and OHS Officer
18.	Occupational Health and Safety	Minimise worker injuries and occupational illness ensure compliance	- Zero recordable injuries or incidents - TRIR (Total Recordable Injury	- Daily site inspections - Toolbox attendance logs	Continuous during construction and weekly formal audits	Monthly Internal OHS Audit Report	EO/EHS Manager and OHS Officer



No.	Aspect	Target	Key Performance Indicator	Measure/Monitoring Method	Frequency	Reporting	Responsibility
		with OHS regulations	- Rate) tracked and reduced - All risk assessments, method statements, and toolbox talks completed - Emergency procedures tested and functional	- Review of incident reports and corrective actions - Check PPE availability and use - Audit risk assessments, method statements, and emergency drills			
19.	Labour & Working Conditions	Ensure fair labour practices, prevent GBV/SEA, and address worker grievances promptly, maximise local employment	100% of workers have compliant employment contracts - No reports of child or forced labour - All reported GBV/SEA cases are investigated and addressed - Worker grievances	- Review of employment contracts and HR records - Grievance log review and corrective action tracking - Training attendance records for labour rights and Code of Conduct	Continuous during construction; monthly audits	Monthly Internal E&S and OHS Audit Report	OHS Officer, CLO, Proponent



No.	Aspect	Target	Key Performance Indicator	Measure/Monitoring Method	Frequency	Reporting	Responsibility
			- resolved within defined timelines 40% of workforce hired from local communities; number of local workers trained; retention of local workers for the duration of construction				
20.	Community Health and Safety	Minimise public exposure to construction hazards, maintain community awareness, and ensure site security	- No incidents or injuries to the public from site activities - Pedestrian access safely always maintained 24/7 security presence and controlled access maintained - All advance notices and awareness briefings	- Weekly inspections of fencing, signage, lighting, pedestrian detours, and security access points - Review of security logs and incident reports - Records of notifications and	Continuous during construction heightened attention during high-risk activities	Monthly Internal E&S and OHS Audit Report	CLO, EO and OHS Officer



No.	Aspect	Target	Key Performance Indicator	Measure/Monitoring Method	Frequency	Reporting	Responsibility
			delivered on schedule Incidents logged and corrective actions implemented	stakeholder briefings Coordination notes with SAPS or other local authorities			
21.	Resource efficiency (energy, water and materials)	Efficient use of resources utilised	- Fuel consumption per month - Evidence of unnecessary idling incidents - Monthly water consumption volumes - Number of leaks identified and repaired - Volume of excavated material reused on site vs disposed off-site - Quantity of waste generated by waste stream	- Review fuel delivery records, equipment logs, and site inspections of plant and equipment - Review water abstraction records, delivery invoices, and site inspections for leaks - Review material movement records,	Monthly	Monthly Internal E&S Audit Report	EO



No.	Aspect	Target	Key Performance Indicator	Measure/Monitoring Method	Frequency	Reporting	Responsibility
			- Evidence of waste segregation on site - Number of toolbox talks / awareness sessions conducted - Housekeeping inspection findings	disposal slips, and site logs - Review waste manifests and recycling records; site inspections of waste storage areas - Review training records and site inspection checklists			
22.	Construction Camp Waste	Clean site and no littering	Housekeeping findings	- Daily checks - Housekeeping logs	Daily	Monthly Internal E&S Audit Report	EO
23.	Employment expectations	Managed expectations and transparent hiring	- Number of employment related grievances % of locals hired recorded - Number of CLO engagements	- GRM review - HR/sourcing records - CLO engagement logs	Monthly	Monthly Internal E&S Audit Report	CLO



No.	Aspect	Target	Key Performance Indicator	Measure/Monitoring Method	Frequency	Reporting	Responsibility
24.	Soil Erosion from Exposed Areas	No off-site sediment transport	- Stockpiles stable - Silt fences effective	- Post-rain inspections - Photographic evidence	After rainfall events	Monthly Internal E&S Report	EO
25.	Weather-Related Delays / Intense Rainfall	Safe, resilient work planning	- Rain protocols implemented - Number of weather delays recorded	- Weather logs - Pre/post-storm inspections	Daily (rainy periods)	Monthly Internal E&S Report	EO
26.	High Wind Events	Safe crane/lift operations; dust minimised	- Work stoppages at thresholds - Materials secured - Dust suppression increased	- Wind speed logs - Work permits - Site inspections	Daily (wind season)	Monthly OHS/E&S Report	OHS Officer
27.	Stormwater Overload & Localised Flooding	No uncontrolled discharge/flooding	- Number of blocked drains - Pump readiness confirmed	- Rainfall inspections - Drain/inlet checks - Equipment readiness logs	Post-rainfall	Monthly Internal E&S Report	EO
28.	Climate-Driven Material Degradation	No weather-related material loss	% of materials under cover/ventilated	- Daily storage checks - Stockpile condition logs	Daily	Monthly E&S Report	EO



No.	Aspect	Target	Key Performance Indicator	Measure/Monitoring Method	Frequency	Reporting	Responsibility
			Number of material loss incidents				
29.	Chance Finds Procedure (Heritage)	Zero heritage damage and compliant stop-work	- Number of CFP activations - Correct procedure followed	- Toolbox training logs - Incident/CFP records	As needed	Monthly E&S Report	EO
30.	Emergency Preparedness and Response	Effective emergency preparedness and timely, coordinated response to incidents to protect workers, communities, and the environment	- Approved site-specific Emergency Preparedness and Response Plan in place - Number of emergency drills conducted (fire/spill) % of workers trained in emergency response - Emergency incidents responded to in	- Review of approved EPRP documentation - Review of emergency drill records and reports - Review of training registers and attendance logs - Review of incident and near-miss reports	Prior to construction; drills quarterly; incident-based review as required	Monthly Internal E&S Report; Incident Reports (as applicable)	Proponent and Contractor EHS Manager, OHS Officer



No.	Aspect	Target	Key Performance Indicator	Measure/Monitoring Method	Frequency	Reporting	Responsibility
			accordance with the EPRP				
31.	Rehabilitation and Reinstatement of Disturbed Areas	All areas disturbed during construction are reinstated promptly and maintained in a stable, safe and visually acceptable condition.	• Number of disturbed areas requiring rehabilitation • Percentage of disturbed areas rehabilitated within agreed timeframes • Evidence of erosion, dust generation or surface instability • Condition of reinstated surfaces, landscaping and stormwater features	• Visual inspections of disturbed and rehabilitated areas following completion of works • Review of rehabilitation and reinstatement records • Photographic records before and after rehabilitation • Inspection following rainfall events	As required following disturbance; formal inspections weekly and after rainfall events	Monthly E&S Audit Report	EO/EHS Manager/ Contractor



11.0 Budget and Resources for C-ESMP Implementation

This section outlines the budgetary provision and resourcing arrangements for implementation of the C-ESMP during the construction phase of the Project.

Implementation of the C-ESMP will be funded through a combination of:

- E&S and OHS measures embedded within the construction contracts, and
- Separately costed monitoring, auditing, specialist systems and targeted environmental and social measures, where applicable.

This approach reflects standard construction practice, whereby many environmental and social management measures (including dust suppression, erosion and sediment control, traffic management, emergency preparedness, site supervision and routine inspections) are implemented as part of day-to-day construction activities and contractual obligations, while specific monitoring and independent assurance functions are costed separately to ensure transparency and compliance with lender requirements.

Implementation of the C-ESMP is supported by a dedicated contractor Health, Safety and Environmental (HSE) budget, covering most construction-phase environmental and social management measures. The Proponent (Biovac) has appointed the Principal Contractor and specialist subcontractors and has ensured that adequate provision is made within the construction contracts for HSE resources. Collectively, the appointed contractors have budgeted approximately ZAR 33.68 million for HSE resources for the construction phase. This budget covers environmental controls, occupational health and safety management, training, inspections, emergency preparedness, traffic management, dust suppression and related requirements.

Table 11-1 does not seek to duplicate this budget but rather highlights selected ESMP-specific cost items and identifies where measures are either embedded within contractor HSE budgets or separately costed, to demonstrate that adequate provision has been made for effective implementation of the C-ESMP.

Table 11-1: Indicative Costing for Implementation of the C-ESMP⁶

Aspect	Responsible Party	Timing / Frequency	Indicative Cost (ZAR)	Relevant ESMP / Management Plan Section
Environmental Monitoring				
Weather Monitoring	Contractor	Daily during construction	Included in contractor rates	Construction Environmental & Social Monitoring Plan, Items 25-26
Noise Monitoring (boundary monitoring:	Contractor	Continuous during construction	R 200 000	Construction Environmental & Social

⁶ References included in Table 11-1 are provided for clarity to demonstrate alignment between construction-phase cost items and relevant C-ESMP commitments, monitoring requirements and management plans. A similar level of cross-referencing is not required for the Operational ESMP, where environmental and social management measures are embedded within Biovac's Environmental and Social Management System (ESMS).



Aspect	Responsible Party	Timing / Frequency	Indicative Cost (ZAR)	Relevant ESMP / Management Plan Section
SANS 10103 & municipal by-laws)				Monitoring Plan, Item 16
Occupational Hygiene Monitoring				
Heat Stress Assessments	Contractor	Bi-annual (legislative requirement)	Included in contractor rates	C-ESMP, Item 15 (OHS)
Environmental & Social Auditing				
Independent Environmental & Social Audits (SLR Consulting)	Project Sponsor (Proponent)	Monthly	R 20 000	Section 9 – Audit
Independent OHS Audits (OHS Consultant: Dr JNR Lapere)	Project Sponsor (Proponent)	Monthly	R 70 000	Section 9 – Audit
Other Environmental & Social Measures				
Waste Management (General & Hazardous)	Contractor	Monthly	R 72 500	Based on current facility costs
Dust Suppression	Contractor	As required	Included in contractor rates	C-ESMP
Soil Erosion & Sediment Control	Contractor	As required	Included in contractor rates	C-ESMP
Safety Equipment (incl. fire detection system: new facility)	Contractor	Once-off	R 2 500 000	C-ESMP
Staff Health & Safety (current facility support)	Contractor	Monthly	R 118 559	C-ESMP
Emergency Response Materials (Spill Kits)	Contractor	As required	Included in contractor rates	C-ESMP
Traffic Management Measures	Contractor	Continuous	Included in contractor rates	Traffic Management Plan



Aspect	Responsible Party	Timing / Frequency	Indicative Cost (ZAR)	Relevant ESMP / Management Plan Section
Socio-Economic Development (SED) & Community Outreach	Biovac Corporate Brand Team	Monthly	R 50 000	Community Engagement / CSR Initiatives

11.1 Notes on C-ESMP Costing

- Internal environmental and social audits are undertaken in-house and are therefore not costed separately in this table.
- Environmental, social, health and safety staffing costs are excluded, as these functions are fulfilled by salaried personnel appointed by the Proponent and the Contractor.
- Training costs are not itemised separately, as training is delivered in-house through induction programmes, toolbox talks and targeted corrective-action sessions during construction.
- Stakeholder engagement activities and grievance management are facilitated in-house via the CLO and are therefore not separately costed.
- Machinery, plant and equipment maintenance costs are included within the Contractor's construction rates.
- Dust fall-out monitoring is undertaken visually as part of the Dust Suppression Programme. Additional monitoring may be implemented if triggered by complaints, exceedances or lender requirements.
- Occupational hygiene surveys may include additional assessments (such as vibration, ergonomics, indoor noise, illumination and hazardous chemical exposure risk assessments) where required by legislation or site-specific risk profiles.

Overall, the combination of contractor-embedded HSE budgets and separately costed ESMP measures provides adequate financial, technical and human resources to ensure effective implementation of the C-ESMP. This approach demonstrates the Proponent's commitment to managing environmental, social, health and safety risks in accordance with applicable legislation, lender requirements and Good International Industry Practice throughout the construction phase.

12.0 Conclusion

This ESMP has been prepared to ensure that all environmental, social, and health and safety risks associated with the construction phase are appropriately managed and mitigated. The plan provides a clear framework of roles, responsibilities, mitigation measures, monitoring and auditing requirements to ensure compliance with applicable national legislation, IFC Performance Standards, EIB Environmental and Social Standards, AfDB Integrated Safeguards Systems, World Bank Group Environmental, Health and Safety Guidelines, and relevant ILO Conventions.

Through the implementation of the mitigation and monitoring measures outlined in this ESMP, the Proponent, Contractor, and Environmental, Social, Health and Safety (E&S and OHS) teams are committed to minimising potential impacts, safeguarding workers and surrounding communities, and promoting continuous improvement throughout construction.



Regular inspections, audits and reporting will ensure accountability and transparency to all stakeholders, including lenders, and support the safe and responsible delivery of the Project.



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