

ENVIRONMENTAL IMPACT ASSESSMENT REPORT

FOR THE PROPOSED ZION GARDEN RESIDENCE (ZION G.R.A.)

A Residential Estate Development

Project Location

Agu Awka, Opposite APGA Headquarters, Old Enugu/Onitsha Road,
Awka South Local Government Area, Anambra State, Nigeria



Proponent

EL EHYEH PROPERTIES LIMITED

Plot 36, Agu Awka, Awka South, Anambra State

Prepared By:

STELLOVATE LIMITED

Road 14, Udoka Estate, Awka, Anambra State

Submitted to

**The Anambra State Ministry of Environment,
Ecology Department.**

Date: March 2026

APPROVAL

This Environmental Impact Assessment (EIA) Report for the proposed project has been reviewed in accordance with the Environmental Impact Assessment Act, Cap E12, Laws of the Federation of Nigeria and the Anambra State Environmental Management, Protection and Administration Law (ANSEMPAL), 2024.

The Ministry is satisfied that the study adequately identifies potential environmental and social impacts and provides appropriate mitigation and management measures.

Approval is hereby granted for the implementation of the project subject to strict compliance with the recommendations and Environmental and Social Management Plan (ESMP) contained in this report.

The proponent shall ensure continuous monitoring and reporting to the Ministry throughout the project life cycle.

CERTIFIED BY ME: _____

NAME: Dr. Onyekwelu Ijeoma

DATE: _____

DESIGNATION: Director, Ecology, Ministry of Environment Awka

DECLARATION

This Environmental Impact Assessment Study Report for the Proposed Zion Garden Residence (Zion G.R.A.) a Residential Estate Development has been prepared by registered and licensed EIA/EA Experts in accordance with:

- i. The Environmental Impact Assessment Act, Chapter E12, Laws of the Federation of Nigeria, 2004 (as amended);
- ii. The Anambra State Environmental Management, Protection and Administration Law (ANSEMPAL), 2024, including Part 8 (Sections 223-253) governing the EIA process, and Schedule 8 (Mandatory Study List),

for submission to the Anambra State Ministry of Environment/EIA Committee.

Project Proponent

For and on behalf of:	
EL Ehyeh Properties Limited Plot 36, Agu Awka, Old Enugu/Onitsha Road Awka South LGA, Anambra State, Nigeria	Name: Ndefo Chinonso Hillary Designation: Chief Executive Officer Signature: Date: 12 March 2026

EIA Consulting Firm

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ABBREVIATIONS AND ACRONYMS

Abbreviation	Full Meaning
ANSEMPAL	Anambra State Environmental Management, Protection and Administration Law
ANSEWCCA	Anambra State Erosion, Watershed and Climate Change Agency
ASWAMA	Anambra State Waste Management Authority
BF	Borehole Facility
BOD ₅	Five-day Biochemical Oxygen Demand
BS	Building Structure
CAC	Corporate Affairs Commission
CCTV	Closed Circuit Television
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CO ₂ e	Carbon Dioxide Equivalent
DCP	Dynamic Cone Penetrometer
DMS	Data Management System
EA	Environmental Audit
ECN	Energy Commission of Nigeria
EEDC	Enugu Electricity Distribution Company
EIA	Environmental Impact Assessment
EMCA	Environmental Management and Coordination Act
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
FME _{env}	Federal Ministry of Environment
FRSC	Federal Road Safety Corps
GHG	Greenhouse Gas
HSE	Health, Safety and Environment
ICC	International Convention Centre, Awka
IPCC	Intergovernmental Panel on Climate Change
LED	Light Emitting Diode

LGA	Local Government Area
NESREA	National Environmental Standards and Regulations Enforcement Agency
NIS	Nigerian Industrial Standard
PM _{2.5}	Particulate Matter with aerodynamic diameter of 2.5 micrometres or less
PM ₁₀	Particulate Matter with aerodynamic diameter of 10 micrometres or less
PPE	Personal Protective Equipment
SEO	Site Environmental Officer
SON	Standards Organisation of Nigeria
TDS	Total Dissolved Solids
TOR	Terms of Reference
TSS	Total Suspended Solids
UNFCCC	United Nations Framework Convention on Climate Change
VOC	Volatile Organic Compounds
WHO	World Health Organization

EXECUTIVE SUMMARY

ES.1 Background and Purpose of This Report

Nigeria faces one of the most acute housing deficits in sub-Saharan Africa. In Anambra State, the rapid growth of Awka as the State capital has intensified demand for organised, adequately serviced residential accommodation, driving unplanned settlement expansion and pressure on infrastructure across the city. It is in response to this challenge that EL Ehyeh Properties Limited proposes to develop the Zion Garden Residence a residential plot estate at Plot 36, Agu Awka, along the Old Enugu/Onitsha Road, Awka South Local Government Area, Anambra State.

The proposed estate will provide demarcated and serviced residential plots to individual buyers who will develop their own homes within a structured, secure and well-managed environment. Estate infrastructure to be constructed by the proponent includes a perimeter security fence and manned entrance gatehouse, internal asphalt access roads, concrete-lined surface drainage channels, a centralised borehole water supply system, an EEDC electricity connection with internal reticulation, and landscaped open spaces planted with indigenous trees and vegetation.

Stellovate Limited was commissioned as the EIA Consultant, authorised by both the Anambra State Ministry of Environment to conduct this Environmental Impact Assessment (EIA) and prepare this Report. This Executive Summary provides a concise overview of the full Report's findings.

Table ES-1: Project at a Glance

Project at a Glance	
Project Name	Zion Garden Residence (Zion G.R.A.)
Project Type	Residential Plot Estate Development
Project Proponent	EL Ehyeh Properties Limited (RC: 1499498, incorporated 31 May 2018)
CEO	Ndefo Chinonso Hillary
Project Location	Plot 36, Agu Awka, Old Enugu/Onitsha Road, Awka South LGA, Anambra State
Site Area	11,759.44 m ² (approximately 1.18 hectares)
Land Tenure	Certificate of Occupancy and Deed of Assignment

EIA Category	Mandatory Study - EIA Act Cap E12; ANSEMPAL 2024, Schedule 8
EIA Consultant	Stellovate Limited
Report Reference	SV/EIA/AN/026001
Construction Period	~12–14 months from commencement of site mobilisation
GHG Emissions	~15–21t CO ₂ e total (construction); ~61–130t CO ₂ e/a (operation), well below 25,000 t/a threshold

Legal and Regulatory Framework

The proposed project falls on the federal Mandatory Study List under the Environmental Impact Assessment Act, Cap E12, Laws of the Federation of Nigeria, 2004 (as amended), and on Schedule 8 (the State Mandatory Study List) of the Anambra State Environmental Management, Protection and Administration Law (ANSEMPAL), 2024. Both statutes require that a full EIA be conducted and approved before construction commences. Section 227(4) of the 2024 Law requires the proponent to apply in writing to the Commissioner for Environment, and Section 233 provides that no authority may permit a listed project to proceed until the EIA Committee has acted and all conditions have been fulfilled.

Other applicable instruments include the Environmental Impact Assessment Procedures and Charges Regulations 2021, the National Environmental (Noise Standards and Control) Regulations 2009, the Nigerian Industrial Standard NIS 554:2015 for potable water, and the Factories Act, Cap F1. Specific obligations under the 2024 Law relevant to this project include the duty to landscape all tenement perimeter areas (Section 79), maintain a three-metre setback (Section 80), plant trees annually (Section 82), obtain wastewater clearance for any estate accommodating fifty or more persons before first occupation (Section 216(1)), prohibit waste burning (Section 136) and engage only ASWAMA-licensed waste collectors (Section 152). No construction shall commence until both the federal EIA Certificate and the state EIA Preliminary Report are in hand and all approval conditions complied with.

The EIA Process

The EIA was conducted in the following sequence: registration of the project in the Public Registry of the Anambra State Ministry of Environment; appointment of Stellovate Limited as EIA Consultant; scoping and preparation of Terms of Reference; primary baseline data

collection through field visits in January 2026 (GPS surveying, soil sampling at four points, groundwater quality analysis, ambient air quality measurements at three points and noise environment assessment); systematic impact identification and evaluation using an activity-receptor matrix; stakeholder consultation with regulatory authorities, the ICC Awka management, Agu Awka community leaders and neighbouring property owners; preparation of the Environmental and Social Management Plan (ESMP); and preparation and submission of this Report. A minimum twenty-one-day public comment period will be facilitated by the EIA Committee in accordance with Section 315(1) of the 2024 Law, following which the Committee will issue its Preliminary Report.

The Host Environment

The project site occupies gently undulating terrain within the rapidly urbanising corridor of Awka South Local Government Area, with GPS-confirmed elevations ranging from 49 to 58 metres above mean sea level. The site is located opposite the APGA headquarters on the Old Enugu/Onitsha Road, few meters away from Finotel Classique Hotel, and is situated within the broader vicinity of the International Convention Centre (ICC), Awka which was identified as a high-sensitivity receptor for construction noise and dust and the Rotic Aluminium Extrusion facility.

Soils are predominantly sandy loam to clay loam, of moderate organic content and free of significant heavy metal contamination, but susceptible to erosion if exposed during the wet season. Groundwater quality analysis of the site well revealed exceedances of drinking water standards for total suspended solids (209.5 mg/L against a limit of 30 mg/L), BOD₅ (8.99 mg/L against 3 mg/L) and total coliforms (140 MPN/100 mL), with objectionable odour, taste and turbidity confirming that the site water is not safe for consumption without treatment. Ambient air quality at the site is good, with all measured parameters within WHO and NESREA guideline values. The noise environment is consistent with a mixed residential-commercial setting. No rare, threatened or CITES-listed plant or animal species were identified within the project footprint. The socio-economic environment is characterised by a growing, economically active population with good road and telecommunications infrastructure but without reliable public water supply.

Key Project Activities

The construction phase is estimated at twelve to fourteen months and will be implemented in seven sequential stages:

- i. Site preparation, mobilisation and installation of pre-construction erosion control measures;
- ii. Construction of perimeter fence, entrance gate and security gatehouse;
- iii. Internal road earthworks, sub-grade formation and surface drainage channel construction;
- iv. Asphalt road surfacing, kerbing and road markings;
- v. Utility installations - EEDC electricity connection, internal reticulation, borehole drilling, pump installation and water distribution pipework;
- vi. Landscaping of open spaces and road verges with indigenous trees and vegetation (Sections 79 and 82, 2024 Law);
- vii. Pre-commissioning water quality testing, system commissioning, snagging and formal handover to the proponent.

During the operational phase, individual plot holders will develop their purchased plots over time. The estate management body will maintain shared infrastructure, enforce estate regulations, manage waste and security services, monitor water quality, conduct annual tree planting and submit regular environmental performance reports to ANSEMPAL and the EIA Committee.

Positive Impacts

The project will generate the following significant and lasting positive impacts:

- i. Provision of organised, secure and serviced residential plots, directly addressing the housing deficit in Awka South and improving living standards for resident families;
- ii. Temporary employment during construction for an estimated forty to sixty workers, with priority recruitment from Awka South LGA, providing income and skills transfer to the host community;
- iii. Sustained government revenues through property taxes and development levies, stimulating ancillary commercial and service activity along the Old Enugu/Onitsha Road corridor;

- iv. Enhancement of urban green infrastructure through the mandatory planting and maintenance of indigenous trees, providing a long-term carbon sequestration benefit;
- v. Contribution to the realisation of the overarching objective of the Anambra State Environmental Management, Protection and Administration Law, 2024 to provide a clean, safe and healthy environment for all residents of the State.

Environmental and Social Impacts and Mitigation Measures

The full EIA Report (Chapter Five) identifies and evaluates fourteen significant environmental and social impacts seven during construction and seven during operation. All adverse impacts are temporary or manageable, and none is irreversible. The potential negative impacts and the measures prescribed to prevent or reduce them are summarised in Table ES-2 below.

Table ES-2: Environmental and Social Impacts and Mitigation Measures

Impact	Mitigation Measures
Dust and Air Quality (Construction)	▪ Water bowser spraying of all unpaved areas at least twice daily; continuously during Harmattan (Dec-Feb) ▪ All vehicle loads covered with tarpaulins; stockpiles covered when not in use ▪ Dusty operations suspended in high-wind conditions ▪ FFP2 dust masks provided to all workers in dusty tasks ▪ All plant maintained in good working order to minimise exhaust emissions ▪ Legal basis: Section 255(1)(d) and 288, ANSEMPAL Law 2024; NESREA Air Quality Regulations
Noise and Vibration (Construction)	▪ Construction strictly limited to 07:00-18:00 weekdays; 08:00-14:00 Saturdays; no work on Sundays or public holidays ▪ Minimum 72-hour advance written notice to ICC Awka and neighbouring buildings before unusually noisy operations ▪ Temporary acoustic barriers erected at site boundaries adjacent to sensitive receptors ▪ All generators and compressors fitted with functioning silencers ▪ Hearing protection for all workers exposed to ≥ 85 dB(A) ▪ Legal basis: Section 282, ANSEMPAL Law 2024; NESREA Noise Regulations 2009
Soil Erosion and Sediment Runoff (Construction)	▪ Silt traps, earthen berms and geo-textile barriers installed before any ground disturbance ▪ Phased clearing to limit bare soil area at any one time ▪ Topsoil stripped and stockpiled separately for reuse in landscaping

	▪ Prompt re-vegetation of all completed areas ▪ Construction during rainy season (Mar–Jul) managed with heightened care ▪ Legal basis: Part 2 (ANSEWCCA mandate); Sections 136, 137, 145, ANSEMPAL Law 2024
Construction Waste	▪ Waste hierarchy applied: reduce → reuse → recycle → dispose ▪ Segregated storage of soil, masonry, timber and steel offcuts ▪ Open burning of any waste strictly prohibited (Section 136, 2024 Law) ▪ All waste removed by ASWAMA-licensed contractor to approved disposal sites ▪ Workers' sanitary waste managed through chemical portable toilets ▪ Legal basis: Sections 136, 137, 145, 152, ANSEMPAL Law 2024
Traffic Disruption (Construction)	▪ Material deliveries scheduled outside peak commuting hours (07:00–09:00 and 16:30–18:30) ▪ All construction vehicles roadworthy and load-compliant with FRSC standards ▪ Traffic marshal posted at site entrance during busy delivery periods ▪ Road surface in front of site maintained clean and free of mud and debris
Occupational Health and Safety (Construction)	▪ Mandatory site safety induction for every worker before first day on site ▪ Resident HSE Officer and Site Environmental Officer (SEO) appointed before mobilisation ▪ PPE enforced at all times (hard hat, safety boots, hi-vis vest, dust mask) ▪ All excavations deeper than 1.2 m shored or battered to prevent collapse ▪ First aid kit and trained first aider on site at all times ▪ Weekly toolbox talks; quarterly HIV/AIDS and health awareness programme ▪ All incidents reported to SEO within 24 hours ▪ Legal basis: Factories Act Cap F1; ILO OSH Conventions
Wastewater and Groundwater (Operation)	▪ Every plot holder required to install a properly designed soak-away pit before occupation ▪ Minimum 15m separation between any soak-away pit and any water supply borehole ▪ No discharge of raw sewage into estate drainage channels or any watercourse ▪ Biennial inspection of soak-away systems; licensed tanker for desludging only ▪ Wastewater clearance obtained from Wastewater Management Office (Section 216(1), 2024 Law) at least 3 months before first occupation
Domestic Solid Waste (Operation)	▪ ASWAMA-licensed Private Waste Collector contracted before waste generation commences ▪ Minimum twice-weekly collection schedule enforced throughout operation ▪ Colour-coded covered communal bins provided at convenient estate locations

	▪ Open burning of waste strictly prohibited; sanitation court referrals for persistent violators ▪ Estate Waste Management Guide issued to all residents
Stormwater and Drainage (Operation)	▪ Internal drainage channels designed for peak storm flow and maintained by monthly inspection ▪ Connection to road drainage network approved by the Clear Drainage Agency (Part 3, 2024 Law) ▪ Drainage capacity reviewed and upgraded as plots are progressively developed ▪ Plot holders prohibited from discharging stormwater onto neighbouring plots
Operational Noise (Operation)	▪ Generator use prohibited between 23:00 and 06:00; all generators in acoustic enclosures ▪ Amplified music and public address systems restricted to 07:00–22:00; require estate management approval ▪ Noise complaints procedure with 5-working-day resolution commitment ▪ Unresolved breaches referred to ANSEMPAL Environmental Protection Unit (Part 11, 2024 Law)

Greenhouse Gas Emissions

Total GHG emissions from the proposed project are estimated at approximately 15-21 tonnes of CO₂ equivalent (CO₂e) for the entire construction period (arising primarily from diesel combustion in construction plant) and approximately 61-130 tonnes CO₂e per annum during operation (from generators, grid electricity, cooking and resident vehicle travel). These figures are more than 190 times below the 25,000 t/a mandatory GHG reporting threshold. The estate's mandatory tree planting programme will provide a carbon sequestration benefit of approximately 6-15t CO₂e per year at maturity. The proponent commits to further minimising the carbon footprint through LED lighting in common areas, promotion of solar photovoltaic adoption, including the installation of a solar panel system to power common-area facilities and security infrastructure within the estate and restriction of generator use.

Stakeholder Consultation

A structured stakeholder consultation programme was conducted in fulfilment of Part 12 of the Anambra State Environmental Management, Protection and Administration Law, 2024 and Section 230(1) thereof. The following stakeholder groups were consulted:

- i. Regulatory authorities - ANSEMPAL/EIA Committee, ANSEWCCA, Clear Drainage Agency, ASWAMA and the Wastewater Management Office. Key concerns centred on full compliance with the 2024 Law, particularly the wastewater clearance obligation under Section 216(1) and the requirement for ASWAMA-licensed waste management from the outset of construction;
- ii. ICC Awka management - expressed concern about construction noise and dust affecting events. Requests for 72-hour advance notice and daytime-only working hours have been fully incorporated into the project's mitigation commitments;
- iii. Agu Awka community leaders - broadly supportive of the project; concerns regarding dust and noise management, local employment preference and estate drainage design have all been addressed in the ESMP;
- iv. Neighbouring property owners - concerns about construction-phase nuisance and drainage flood risk are addressed through the ESMP mitigation measures and the project's Grievance Redress Mechanism.

Stakeholder engagement will continue throughout construction and operation through the Grievance Redress Mechanism (acknowledgement within 48 hours, resolution within 15 working days), regular communications to the ICC and neighbours, and annual environmental performance reports published by the estate management.

Conclusion and Recommendations

The comprehensive EIA conducted by Stellovate Limited concludes that the proposed Zion Garden Residence project is technically feasible and environmentally and socially acceptable. Its adverse environmental impacts are neither severe nor irreversible, and are fully manageable through the rigorous implementation of the mitigation measures and Environmental and Social Management Plan presented in the full EIA Report. The project's positive contributions to housing provision, employment generation, government revenue and urban development in Awka South are significant and enduring, and substantially outweigh the manageable, largely temporary adverse impacts associated with the construction phase.

To greatly work in harmony with the environment and ensure sustainability, the proponent shall proceed with careful consideration of the prescribed mitigation measures through close follow-up and implementation of the recommended Environmental and Social Management

Plan. The project shall be subject to quarterly performance monitoring during construction and annual monitoring during operation, with reports submitted to ANSEMPAL and the EIA Committee as required by the applicable legislation.

It is the professional recommendation of Stellovate Limited that the proposed Zion Garden Residence project, as promoted by EL Ehyeh Properties Limited, be granted the required approvals by the Anambra State Ministry of Environment so as to implement the project, subject to the full and continuing implementation of all conditions and obligations documented in this Report

CHAPTER ONE

INTRODUCTION

1.1 General Overview

Access to decent housing and adequate sanitation is widely recognised as a fundamental human need and a key indicator of social and economic development. In Nigeria, rapid population growth, accelerating urbanisation and persistent rural-urban migration have continued to exert enormous pressure on existing housing stock, particularly in fast-growing urban centres such as Awka, the capital city of Anambra State. The demand for housing in these centres far outstrips supply, resulting in overcrowding, the proliferation of unplanned settlements and increasing pressure on infrastructure, environmental resources and public services.

In response to this challenge, successive governments at the Federal and State levels have introduced policies and programmes aimed at broadening access to decent and affordable housing. In Anambra State, the emergence and consolidation of Awka as the seat of government and an economic hub has significantly intensified the need for planned residential estates capable of accommodating an expanding population whilst ensuring proper sanitation, security and environmental protection. Decent housing is generally understood to be structurally safe, affordable, functionally adequate and supported by basic services such as treated water supply, waste management, drainage infrastructure and accessible road networks. Such housing contributes not only to social stability and improved public health but also to the physical, economic and environmental sustainability of host communities.

Housing must therefore be viewed not merely as the provision of physical structures, but as an integrated process involving the planning, financing, construction and long-term management of residential spaces. It encompasses the identification of shelter needs, the efficient mobilisation of land and other resources and the facilitation of access to accommodation that is adequate, affordable and environmentally sustainable. The responsibility for ensuring such access cannot be borne by government alone; it requires the active and accountable participation of private sector developers and other stakeholders operating within a sound

regulatory framework. Because housing developments carry far-reaching implications for land use, surface and groundwater resources, air quality, waste generation and social relations within host communities, such projects must be guided by rigorous environmental and social considerations from the earliest stages of project conceptualisation.

It is within this context that EL Ehyeh Properties Limited proposes to develop a residential estate known as Zion Garden Residence (Zion G.R.A.) at Agu Awka, situate along the Old Enugu/Onitsha Road in Awka South Local Government Area of Anambra State. The proposed project site is located opposite the headquarters of the All Progressives Grand Alliance (APGA) along the Old Enugu/Onitsha Road, a few blocks from the International Convention Centre (ICC), Awka. The project is intended to provide an organised estate layout within which individual plot owners shall develop residential houses in a controlled, secure and environmentally responsible environment. The development seeks to respond to the growing demand for standard, habitable and well-serviced housing in Awka, whilst promoting orderly urban expansion along an already developing corridor that continues to attract significant private sector investment.

Like all physical developments of this nature, the proposed project carries the potential to affect its surrounding environment. Construction activities will inevitably alter land surfaces, generate dust, noise and vibration, and increase localised demand for water and other natural resources. During the operational phase, the estate will generate domestic waste and wastewater and introduce a permanent residential population into what is currently a partially developed and transitioning urban environment. These interactions between the project and its receiving environment make it necessary to ensure that the development is planned and implemented in a manner that minimises adverse impacts whilst enhancing positive socio-economic benefits for the host community and the broader area.

Sustainable development principles accordingly require that environmental, social, cultural and ethical considerations be integrated systematically into project planning, design and decision-making. In Nigeria, the Environmental Impact Assessment (EIA) process provides the legal and technical framework for achieving this integration. The EIA is a systematic process for identifying, predicting and evaluating the likely environmental and social impacts of proposed projects before their implementation, with a view to recommending appropriate

mitigation and management measures. For residential estate developments such as the proposed Zion Garden Residence, the EIA process is particularly important because such projects introduce long-term human occupation and infrastructure demands into the host environment and thereby have implications for environmental quality, social dynamics and urban functionality that extend well beyond the boundaries of the project site.

At the state level, Section 227(1) of the Anambra State Environmental Management, Protection and Administration Law, 2024 expressly prohibits any proponent from undertaking or embarking on any public or private project without prior consideration, at an early stage, of the environmental effects. Section 227(4) further requires every proponent, unless exempted, to apply in writing to the Commissioner for Environment before embarking on the proposed project. This EIA Report is prepared in fulfilment of those obligations, as well as of the mandatory study requirements of the Environmental Impact Assessment Act, Cap E12, Laws of the Federation of Nigeria, 2004 (as amended).

1.2 Objectives of the Environmental Impact Assessment

Environmental Impact Assessment is a decision-support instrument designed to provide project proponents, regulatory authorities and stakeholders with clear, evidence-based information on the potential environmental and social consequences of a proposed activity. The objectives of any Environmental Impact Assessment under the Anambra State Environmental Management, Protection and Administration Law, 2024 are set out in Section 226 of that Law, which directs that the assessment shall establish, before a decision is taken, that the environmental effects have been properly considered; promote the implementation of appropriate policies and decision-making processes; and encourage information exchange and notification between persons and authorities where proposed activities are likely to have significant environmental effects.

This EIA Study has been conducted in conformity with the requirements of the Environmental Impact Assessment Act, Cap E12, Laws of the Federation of Nigeria, 2004, as amended, and with the provisions of the Environmental Impact Assessment Procedures and Charges Regulations, 2021, made pursuant to the said Act. The study further accords with the comprehensive requirements of the Anambra State Environmental Management, Protection and Administration Law, 2024, in particular Part 8 thereof (Sections 223 to 253), which

establishes the state Environmental Impact Assessment framework, prescribes minimum content requirements for EIA reports and defines the roles and responsibilities of the EIA Committee, the project proponent and the EIA consultant.

The specific objectives of this EIA Study are to:

- i. Identify and evaluate the potential environmental and social impacts of the proposed project across all phases of its life cycle, and determine their nature, magnitude and significance, in fulfilment of the requirements of Section 228(d) of the Anambra State Environmental Management, Protection and Administration Law, 2024, which requires an assessment of the likely or potential environmental impacts of the proposed project and the alternatives, including direct or indirect, cumulative, short-term and long-term effects;
- ii. Examine feasible project alternatives, including alternative sites, designs and construction technologies, in order to identify the option that best satisfies environmental, social and economic criteria, in conformity with Sections 228(c) and 237(1)(f) of the 2024 Law, which require consideration of alternative means of carrying out the project that are technically and economically feasible and the environmental effects of such alternatives;
- iii. Propose practical, cost-effective and implementable mitigation measures to prevent, reduce or manage significant adverse impacts associated with the project, in fulfilment of Section 228(e) of the 2024 Law, which requires the identification, description and assessment of measures available to mitigate any adverse environmental impacts of the proposed project;
- iv. Generate comprehensive baseline environmental and social data on the physical, biological and socio-economic characteristics of the project environment, in accordance with the requirement under Section 228(b) of the 2024 Law that the EIA Report include a description of the potential affected environment, including specific information necessary to identify and assess the environmental effects of the proposed project;
- v. Develop an Environmental and Social Management Plan (ESMP) to guide the proponent, contractors and other relevant parties during the construction, operational and eventual decommissioning phases of the project, in conformity with the

- requirements of Part 8 of the Anambra State Environmental Management, Protection and Administration Law, 2024 and the Environmental Impact Assessment Procedures and Charges Regulations, 2021;
- vi. Facilitate meaningful stakeholder consultation and ensure that community concerns are identified, considered and appropriately addressed in project planning and management, in accordance with Section 230(1) of the 2024 Law, which requires the EIA Committee to give opportunity to government agencies, members of the public, experts in any relevant discipline and interested groups to make comments on the environmental impact assessment of any project before issuing an EIA Report;
 - vii. Identify and document gaps in knowledge which may be encountered in computing the required information, in accordance with Section 228(f) of the 2024 Law; and
 - viii. Present the findings of the assessment in a transparent and accessible manner, including the brief and non-technical summary required under Section 228(h) of the 2024 Law, in support of informed decision-making by the EIA Committee, the Federal Ministry of Environment and other relevant regulatory authorities.

1.3 Legal and Regulatory Framework

The preparation of this EIA Report is anchored on a comprehensive framework of federal and state legislation, sectoral regulations, guidelines and applicable international standards. All project activities are subject to, and must comply with, the provisions of the following key instruments:

1.3.1 Federal Legislation and Regulations

The Environmental Impact Assessment Act, Cap E12, Laws of the Federation of Nigeria, 2004 (as amended) constitutes the primary federal legislation governing the EIA process in Nigeria. Section 2 of the Act makes it mandatory for the Federal Government or its agencies to ensure that an EIA is conducted for any project that is likely to have a significant adverse effect on the environment before such a project is approved or undertaken. Residential estate developments and urban infrastructure works fall within the Mandatory Study List set out in the Second Schedule to the Act, thereby requiring the preparation of a full EIA Mandatory Study Report.

The Environmental Impact Assessment Procedures and Charges Regulations, 2021, issued by the Federal Ministry of Environment pursuant to the EIA Act, prescribe the procedural requirements for the conduct of EIA studies in Nigeria, including scoping, baseline data collection, impact assessment, the formulation of mitigation measures, public consultation, report preparation and submission. The Second Schedule of the Regulations prescribes the minimum content requirements for EIA reports. This Report has been prepared in full compliance with those format and content requirements.

Other applicable federal instruments include the National Environmental Standards and Regulations Enforcement Agency (Establishment) Act, 2007 (NESREA Act); the National Environmental (Sanitation and Wastes Control) Regulations, 2009; the National Environmental (Air Quality Control) Regulations, 2014; the National Environmental (Noise Standards and Control) Regulations, 2009; the National Environmental (Surface and Groundwater Quality Control) Regulations, 2011; and the Land Use Act, Cap L5, Laws of the Federation of Nigeria, 2004.

1.3.2 State Legislation, Regulations and Regulatory Agencies

The Anambra State Environmental Management, Protection and Administration Law, 2024, enacted by the Anambra State House of Assembly, is the principal state-level statutory instrument governing environmental management and protection within Anambra State. The Law is administered by the Anambra State Ministry of Environment, which is responsible under Section 3 of the Law for the overall management of the environment and environmental-related matters in the State. The Law is of particular and comprehensive relevance to this project on account of its breadth: it establishes multiple specialised environmental agencies under the supervision of the Ministry and imposes detailed obligations on project proponents, developers and estate operators across the full spectrum of environmental management.

Section 4 of the Law declares its overarching objectives to be: (a) to provide a clean, safe and healthy environment for all residents of Anambra State; and (b) to enable citizens to access the various public amenities or segments of the environment for residential, recreational, educational, health, cultural and economic purposes. These are the objectives that the proposed Zion Garden Residence project directly serves. Section 227 of the Law prohibits any proponent from undertaking a public or private project without prior consideration of the environmental

effects at an early stage. Sections 228 and 229 prescribe the minimum content of EIA reports and require that environmental effects be assessed with a degree of detail commensurate with their likely significance. Section 230 establishes the right of government agencies, the public, experts and interested groups to comment on the EIA before a Report is issued. Section 231 requires the proponent to register in the Public Registry domiciled at the Ministry upon payment of the prescribed fee and to apply in writing to the Commissioner, who shall refer the application to the EIA Committee. Section 232 requires notification of any other State whose environment may be significantly affected by the project; for the purposes of this assessment, it is confirmed that the project is not likely to significantly affect the environment of any neighbouring State. Section 233 prohibits the commencement of any project on the Mandatory Study List until the EIA Committee has taken a course of action conducive to its powers or issued an order that the project may be carried out, with or without conditions. The penalties for non-compliance with Part 8 are prescribed in Section 249, which imposes fines of Five Hundred Thousand Naira or three months imprisonment on individuals and fines of not less than One Million Naira and not more than Ten Million Naira or six months imprisonment on principal officers of firms or corporations. Section 252 confirms that the overall cost of the EIA, including consultancy fees, panel review costs and report certification costs, is the obligation of the project developer.

The Law further establishes, under the supervisory authority of the Ministry, several agencies whose mandates are directly relevant to the proposed project. The Anambra State Erosion, Watershed and Climate Change Agency (ANSEWCCA), established under Part 2 of the Law, has direct jurisdiction over erosion control, watershed management and climate change adaptation — matters of heightened relevance given the construction-phase earthworks and soil disturbance involved in this project and the well-documented susceptibility of Anambra State soils to gully erosion. The Anambra State Clear Drainage and Inland Flood Management Agency, established under Part 3 of the Law, is responsible for drainage management across the State and accordingly has regulatory interest in the drainage design and operational drainage maintenance provisions of this project. The Anambra State Leisure Parks, Gardens and Beautification Agency, established under Part 4 of the Law, administers the landscaping and beautification obligations imposed on all tenement owners and occupiers under Section 79 of the Law and the setback obligations prescribed in Section 80, which require all tenement

owners and occupiers to maintain a setback of three metres after the fence and before the drainage, and to ensure that such setbacks are either greened or paved. Section 82 of the Law designates the 10th of June each year as Tree Planting Day in the State, with a requirement that trees planted measure a minimum of five metres height and five metres in their spacing distance. These obligations are expressly incorporated into the estate design and management provisions set out in Chapters Three and Seven of this Report.

The Anambra State Waste Management Authority (ASWAMA), established under Part 6 of the Law, regulates the collection, transport and disposal of all solid waste generated within the State and is responsible under Section 152 for licencing private waste collectors. The engagement of an ASWAMA-licenced private waste collector is required during both the construction and operational phases of this project, as provided for in the Environmental and Social Management Plan. Section 136 of the Law prohibits open burning of waste, and Section 137 requires that all waste be deposited only at approved waste disposal sites. Section 145 imposes an obligation to remove all excavated silt, earth or other material and debris from any public place within twenty-four hours of its deposition.

The Wastewater Management Office, established under Part 7 of the Law, oversees wastewater management across the State. Section 216(1) of the Law imposes a specific and critical obligation on this project: any person, organisation or government agency that intends to develop an estate that will accommodate a population of fifty or more persons must connect to the sewage system in the catchment area or obtain a wastewater clearance from the Wastewater Management Office in a manner approved by that Office. The proposed Zion Garden Residence, which will accommodate substantially more than fifty persons upon full occupancy, is accordingly required to obtain such clearance before the estate is brought into occupation. This obligation is addressed in detail in the Environmental and Social Management Plan presented in Chapter Seven and in the Regulatory Compliance Schedule contained in Chapter Eight of this Report.

The Anambra State Environmental Protection Unit (ANSEMPAL), established under Part 11 of the Law, is empowered under Section 281 to apply enforcement measures to combat environmental degradation, to enter and search premises engaged in manufacturing operations, to perform tests and take samples of substances found on any premises, and to carry out

compliance monitoring across all sectors. Section 282 of the Law prohibits noise that is likely to cause nuisance or discomfort to the general public, and Section 284 prohibits any person from carrying on any process or activity resulting in the discharge of any substances into the environment except under a permit granted by the Unit. Section 287 requires that all emissions from vehicles, plants and equipment, including generating plants in residential, commercial and industrial areas, must conform to the applicable emission standards. All of the obligations imposed by Part 11 are taken into account in the mitigation measures and ESMP provisions set out in Chapters Six and Seven of this Report.

Enforcement of the Law across all its Parts is additionally supported by the Operation Clean and Healthy Anambra (OCHA Brigade), established under Part 13 of the Law, which carries out environmental sanitation enforcement functions across the State and works with the Ministry and its agencies to ensure compliance with environmental regulations.

The qualifications required of EIA consultants in Anambra State are prescribed in Sections 250 and 251 of the 2024 Law. Section 250 provides that project developers shall not select their own consultants but shall be assigned consultants from the list of accredited consultants maintained by the EIA Committee, in order to avoid conflicts of interest. Section 251 requires an EIA consultant to be a firm with proven Environmental Management Competence, registered with the Corporate Affairs Commission and with the EIA Committee of the Ministry, with a team leader who is a holder of a recognised degree in Environmental Sciences, Geography, Climatology, Geology, Engineering, Water Resources Management, Soil Science, Agriculture, Climate Change, other branches of Science or a related field, with sufficient expertise and a proven record of performance in environmental impact assessment. Stellovate Limited is duly registered with the Corporate Affairs Commission and is authorised as an EIA consultant by the Anambra State Ministry of Environment and the Federal Ministry of Environment, in full compliance with Section 251 of the 2024 Law.

1.3.3 Other Applicable State Instruments

Other applicable state instruments include the Anambra State Urban and Regional Planning Law and the regulations and development control standards made thereunder, which govern the use and development of land within the State and with which the proposed estate layout and infrastructure design are required to conform. The provisions of the Anambra State Road

Traffic Law are also of relevance to the construction-phase traffic management obligations of the project.

1.3.4 International Guidelines and Standards

This study has further drawn upon applicable international environmental and social standards, including the International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability (2012) and the World Health Organisation (WHO) Air Quality Guidelines (2021), which provide global benchmarks against which baseline data and predicted impacts have been assessed where applicable Nigerian or Anambra State standards do not exist or are less prescriptive than international best practice.

1.4 Terms of Reference

A scoping exercise was undertaken at the preliminary stage of the study in accordance with the requirements of the Environmental Impact Assessment Procedures and Charges Regulations, 2021, and the provisions of Section 236 of the Anambra State Environmental Management, Protection and Administration Law, 2024, which provides that the environmental impact assessment process may include scoping and the setting of terms of reference of the study. The purpose of scoping was to identify the key environmental and social issues likely to arise from the proposed project, to define the spatial and temporal boundaries of the study and to focus the assessment on matters of genuine significance, thereby avoiding unnecessary expenditure of resources on trivial or non-significant concerns. The outcome of the scoping exercise, together with the minimum content requirements prescribed in Section 228 of the 2024 Law and in the Second Schedule of the Environmental Impact Assessment Procedures and Charges Regulations, 2021, formed the basis for the Terms of Reference (TOR) for this study.

The TOR for this EIA, developed in conformity with Section 228 of the Anambra State Environmental Management, Protection and Administration Law, 2024, included the following:

- i. Description of the proposed project, including its location, design, scale, activities, supporting infrastructure and project proponent details, in accordance with Section 228(a) of the 2024 Law;

- ii. Description of the potential affected environment, including specific information necessary to identify and assess the environmental effects of the proposed project, in accordance with Section 228(b) of the 2024 Law;
- iii. Review of relevant national and state environmental legislation, regulations and guidelines applicable to the project, with particular reference to the Anambra State Environmental Management, Protection and Administration Law, 2024;
- iv. Description of the practical steps of the proposed project, including construction methodology and operational arrangements, in accordance with Section 228(c) of the 2024 Law;
- v. Assessment of the likely or potential environmental impacts of the project and the alternatives, including the direct or indirect, cumulative, short-term and long-term effects, as required by Section 228(d) and Section 237(1) of the 2024 Law, including cumulative environmental effects likely to result from the project in combination with other projects that have been or will be carried out in the area;
- vi. Identification, description and assessment of measures available to mitigate adverse environmental impacts, and formulation of an Environmental and Social Management Plan specifying monitoring requirements, institutional responsibilities, reporting mechanisms and budget provisions, as required by Section 228(e) of the 2024 Law;
- vii. Identification of gaps in knowledge which may be encountered in computing the required information, as required by Section 228(f) of the 2024 Law;
- viii. Consideration of whether the environment of any other town, village or Local Government Area is likely to be affected by the proposed project or its alternatives, as required by Section 228(g) of the 2024 Law, and notification of any potentially affected neighbouring State in accordance with Section 232 of that Law;
- ix. Preparation of a brief and non-technical summary of all information provided in the foregoing sections, in accordance with Section 228(h) of the 2024 Law; and
- x. Stakeholder consultation in accordance with Section 230(1) of the 2024 Law and the public participation requirements of the Environmental Impact Assessment Procedures and Charges Regulations, 2021.

1.5 Scope and Methodology

The methodology adopted for this EIA Study was developed in conformity with the procedures prescribed in the Environmental Impact Assessment Procedures and Charges Regulations, 2021, and with international best practice in environmental and social impact assessment. The principal methodological steps undertaken were as follows:

1.5.1 Project Screening

The proposed development was screened in order to determine its category under the Nigerian EIA classification system and to confirm the level and type of environmental assessment required. Residential estate developments fall within the Mandatory Study List set out in the Second Schedule to the EIA Act, Cap E12. The proposed project was accordingly classified as requiring the preparation of a full EIA Mandatory Study Report. At the state level, the proposed project similarly falls within the Mandatory Study List specified in Schedule 8 to the Anambra State Environmental Management, Protection and Administration Law, 2024, with the consequence that, under Section 233(1) of that Law, no authority may exercise any power or perform any duty or function that would permit the project to be carried out in whole or in part until the EIA Committee has taken a course of action conducive to its powers or issued an order that the project may proceed, with or without conditions.

1.5.2 Scoping

A scoping exercise was conducted to identify the key issues to be addressed in the assessment and to define the spatial and temporal scope of the study, in accordance with Section 236 of the Anambra State Environmental Management, Protection and Administration Law, 2024. The scoping process drew upon an initial site reconnaissance, a review of the project description and the applicable legal and regulatory framework, and informal engagements with the project proponent. The outcomes of scoping informed the design of the baseline data collection programme, the selection of impact indicators and the focus of the mitigation and management planning. Consistent with Section 237(1)(b) of the 2024 Law, particular attention was given to identifying cumulative environmental effects likely to result from the project in combination with existing and planned projects in the Old Enugu/Onitsha Road corridor, including the ICC, Awka and the Rotic Aluminium Extrusion facility.

1.5.3 Desktop Review

An extensive review was undertaken of relevant documents, including project information provided by the proponent through the completed Stellovate Limited Project Proponent Data Collection Form, national and state policies, legal and regulatory instruments with particular attention to the provisions of the Anambra State Environmental Management, Protection and Administration Law, 2024 and available published literature on the environmental and socio-economic conditions of the Awka area and Anambra State.

1.5.4 Field Investigations and Baseline Data Collection

Field investigations were conducted in January 2026 by the Stellovate Limited assessment team. These included a detailed site walkover survey; the identification and recording of GPS co-ordinates at five reference points across the project site (SS1 through SS4 and the midpoint of the extreme back boundary fence) using a GPS-enabled application; observation and photographic documentation of site conditions, surrounding land use and sensitive receptors including the ICC, Awka and the Rotic Aluminium Extrusion facility; collection of soil samples at the four designated sampling points (SS1 through SS4); collection of a groundwater sample from the existing closed well on the site; and measurement of ambient air quality parameters at three points within the site.

1.5.5 Laboratory Analysis

Soil samples collected at SS1, SS2, SS3 and SS4 were submitted to an accredited laboratory for analysis of seventeen physical, chemical and heavy metal parameters. The groundwater sample from the site well was analysed for twenty-seven physico-chemical and biological parameters, with results assessed against the Nigerian Industrial Standard for Drinking Water Quality (NIS 554:2015) and the WHO Drinking Water Quality Guidelines (4th edition). Ambient air quality measurements at three points within the site covered six parameters. All analytical results are presented and assessed in Chapter Four of this Report.

1.5.6 Impact Identification and Evaluation

Potential environmental and social impacts were identified through a systematic analysis of the interactions between proposed project activities and the components of the receiving environment at each phase of the project life cycle. The significance of each identified impact was evaluated against seven criteria: nature (adverse or beneficial), magnitude, spatial extent,

duration, reversibility, probability and overall significance. The assessment was conducted with a degree of detail commensurate with the likely significance of each impact, in accordance with Section 229 of the Anambra State Environmental Management, Protection and Administration Law, 2024. Cumulative impacts were considered in accordance with Section 237(1)(b) of the 2024 Law, which requires every mandatory study to include a consideration of any cumulative environmental effects likely to result from the project when taken into consideration with other projects that have been or will be carried out in the project area.

1.5.7 Mitigation and Management Planning

Mitigation measures were formulated for each significant adverse impact identified, following the established hierarchy of prevention, reduction, mitigation and enhancement. The measures have been compiled into an Environmental and Social Management Plan (ESMP) that specifies implementing responsibilities, monitoring indicators, reporting mechanisms and indicative cost provisions, in accordance with the requirements of Part 8 of the Anambra State Environmental Management, Protection and Administration Law, 2024, and the Second Schedule of the Environmental Impact Assessment Procedures and Charges Regulations, 2021.

1.5.8 Stakeholder Consultation

Stakeholder identification and consultation were conducted in line with the requirements of the Environmental Impact Assessment Procedures and Charges Regulations, 2021, and the citizens' participation provisions of Part 12 of the Anambra State Environmental Management, Protection and Administration Law, 2024. Part 12 of the Law (Sections 305 to 317) establishes a comprehensive citizens' rights framework for access to environmental information and public participation in environmental decision-making, including the right of the public to make comments on environmental impact assessments (Section 230), the duty of relevant authorities to consult the public on environmental decisions (Section 315) and the right of citizens to participate in procedures relating to environmental protection (Section 314). A full record of the consultation process and its outcomes is presented in Chapter Eight of this Report.

1.5.9 Report Preparation

This EIA Report has been prepared in accordance with the format and minimum content requirements prescribed in the Second Schedule of the Environmental Impact Assessment

Procedures and Charges Regulations, 2021, and in full conformity with the requirements of Section 228 of the Anambra State Environmental Management, Protection and Administration Law, 2024. The Report is structured to address each of the elements specified in Sections 228(a) through 228(h) of that Law and to provide the EIA Committee and the Federal Ministry of Environment with all information necessary to make an informed determination on the environmental acceptability of the proposed project.

1.6 Justification of the Project

1.6.1 The Demand for Housing in Awka

Urban centres across Nigeria continue to experience deepening housing deficits as a result of sustained population growth, rapid urbanisation and the concentration of economic, administrative and educational functions in major cities. In Awka, the designation of the city as the State capital has attracted a steady and growing influx of civil servants, students, traders and professionals who require accommodation of varying standards. The existing housing stock has not kept pace with this demand, resulting in elevated rental costs, the proliferation of informal and substandard settlements and the over-intensification of already congested residential areas. The proposed Zion Garden Residence is directly responsive to this need, offering an organised and regulated estate layout within which plot owners can develop residential accommodation to appropriate standards, in direct furtherance of the objectives of Section 4(b) of the Anambra State Environmental Management, Protection and Administration Law, 2024, which calls for citizens to be enabled to access the environment for residential purposes.

1.6.2 Land Use Compatibility

The project site is located along the Old Enugu/Onitsha Road corridor at Agu Awka, a rapidly transforming urban zone that is witnessing steady transition from low-density and semi-developed land uses to more intensive residential and mixed-use developments. Notable developments within the immediate vicinity of the site include the International Convention Centre (ICC), Awka, and the Rotic Aluminium Extrusion facility, both of which underscore the strategic developmental importance of the corridor. The proposed use of the site for a residential estate is consistent with the prevailing development trend in the area and aligns with the policy objective of promoting orderly urban expansion within Awka.

1.6.3 Socio-Economic Benefits

The proposed project is expected to generate a range of significant socio-economic benefits, including the provision of habitable and well-serviced residential plots and houses for individuals and families of varying income levels; the creation of direct and indirect employment during both the construction and operational phases; the generation of fiscal revenues to government through taxes, levies and fees; and the stimulation of ancillary commercial and service sector activity in the surrounding area. The establishment of a planned estate with defined infrastructure will also contribute to the orderly and rational use of land within the corridor, reducing the risk of haphazard and environmentally damaging informal development. These benefits are consistent with and supportive of the objectives of the Anambra State Environmental Management, Protection and Administration Law, 2024.

1.6.4 Neighbourhood Development Context

The surrounding area is characterised by ongoing residential, commercial and institutional development, supported by its proximity to the Old Enugu/Onitsha Road, a major traffic artery that provides access to Awka's principal administrative and commercial districts. The proposed development is consistent with and complementary to this broader neighbourhood development trajectory. By introducing a planned estate layout with defined infrastructure and environmental management provisions, the project will contribute to the structured growth of the corridor and help to prevent the type of unco-ordinated development that has led to environmental degradation in many other parts of Awka.

1.7 Structure of this Report

This EIA Report is structured in accordance with the format prescribed by the Environmental Impact Assessment Procedures and Charges Regulations, 2021, and with the minimum content requirements specified in Section 228 of the Anambra State Environmental Management, Protection and Administration Law, 2024.

CHAPTER TWO

PROJECT JUSTIFICATION AND ALTERNATIVES

2.1 Justification of the Project

The proposed residential estate development at Agu Awka, Awka South Local Government Area of Anambra State is justified on social, economic and environmental grounds, as elaborated in the preceding chapter. Rapid urbanisation, persistent population growth and sustained rural-urban migration continue to exert considerable pressure on housing supply in Awka and other urban centres of Anambra State. The progressive widening of the gap between housing demand and supply has given rise to overcrowding, informal and substandard settlements, and increasing strain on existing infrastructure and social services. Access to decent, affordable and well-serviced residential accommodation remains a defining development challenge, particularly for the low- and middle-income households that constitute the backbone of the urban workforce.

The objectives of the Anambra State Environmental Management, Protection and Administration Law, 2024, as stated in Section 4 of that Law, are anchored in the same aspiration: to provide a clean, safe and healthy environment for all residents of Anambra State and to enable citizens to access the environment for residential, recreational, educational, health, cultural and economic purposes. The proposed project directly advances these statutory objectives by providing structured, serviced and secure residential plots within an organised estate environment that meets applicable environmental and building standards.

From a social perspective, the project will provide well-demarcated, serviced and secure residential plots on which purchasers may develop their own residential houses within a regulated and managed estate environment. This model of estate development gives individuals agency over the design and construction of their own homes whilst ensuring that the shared environment like roads, drainage, open spaces, security and utilities meets consistent and adequate standards. The project thereby responds to a specific and underserved market segment of owner-builders seeking organised plot estates with basic infrastructure already in place.

From an economic perspective, the project is justified by its potential to stimulate local economic activity through job creation during construction. Skilled and unskilled labour, including engineers, site supervisors, masons, carpenters, plumbers, electricians and general labourers, will be engaged for the duration of the construction phase, with priority given to local recruitment from Awka South and the surrounding communities in accordance with the project's social commitments. In the long term, the estate will contribute to fiscal revenues through property taxes and development levies and will stimulate the growth of complementary commercial, service and maintenance enterprises along the project corridor.

Environmentally, the project has been designed with sustainability as a guiding principle. Adequate provision has been made in the estate layout for surface drainage channels, open and green spaces, utility installations and waste management infrastructure. The landscaping provisions of the estate comply with the obligations imposed on all tenement owners and occupiers by Section 79 of the Anambra State Environmental Management, Protection and Administration Law, 2024, which requires the landscaping and beautification of the perimeter areas of all properties, and by Section 80, which requires a setback of three metres between the fence line and the drainage channel, with such setbacks to be greened or paved. The estate design also incorporates tree planting in accordance with Section 82 of the Law. The adoption of best construction practices and the full implementation of the mitigation measures and ESMP set out in Chapters Six and Seven will ensure that the development proceeds in a manner that is protective of environmental resources and compliant with all applicable provisions of the 2024 Law.

2.2 Need for the Project

The existing housing stock within the project area and its immediate environs is substantially inadequate to meet current and projected demand. Many residential structures within the wider Awka South corridor are characterised by poor build quality, limited access to adequate services and conditions of congestion that give rise to public health and safety risks. The proposed project is accordingly needed to:

- i. Provide planned, regulated and serviced residential plots that meet minimum infrastructure, building and environmental health standards applicable in Anambra State, and that comply with the applicable requirements of the Anambra State

- Environmental Management, Protection and Administration Law, 2024, including the landscaping, setback, tree planting, waste management and wastewater management obligations of that Law;
- ii. Offer an organised and regulated alternative to informal and unplanned residential development in the project corridor, thereby contributing to the reduction of the housing deficit in a manner consistent with applicable land-use and planning regulations and with the Section 4 objectives of the 2024 Law;
 - iii. Support government efforts towards addressing housing deficits and promoting sustainable and orderly urban development in Awka South, in alignment with the State's urban planning and environmental protection objectives;
 - iv. Improve land-use efficiency within the project area through structured and planned development, including the provision of adequate drainage infrastructure designed in consultation with the Anambra State Clear Drainage and Inland Flood Management Agency established under Part 3 of the 2024 Law; and
 - v. Contribute to the social, environmental and aesthetic quality of the Old Enugu/Onitsha Road development corridor, which is home to major State institutions including the ICC, Awka, and which has a strategic importance to the overall urban fabric of Awka South.

2.3 Analysis of Project Alternatives

In accordance with the requirements of the Environmental Impact Assessment Act, Cap E12, the Environmental Impact Assessment Procedures and Charges Regulations, 2021, and the provisions of Sections 228(c) and 237(1) of the Anambra State Environmental Management, Protection and Administration Law, 2024 which require every mandatory study to include a consideration of the purpose of the project, the environmental effects of the project and the environmental effects of any alternatives, including alternative means of carrying out the project that are technically and economically feasible, a systematic analysis of alternatives to the proposed project has been undertaken as part of this EIA Study. The purpose of this analysis is to determine whether more environmentally sound, technically feasible or socio-economically advantageous options exist for meeting the identified development need. The alternatives considered are presented in the following sections.

2.3.1 The No-Project Alternative

Under the no-project alternative, the proposed residential estate development would not be implemented. The project site at Plot 36, Agu Awka, would remain in its current partially developed state, with no new estate construction activities undertaken by EL Ehyeh Properties Limited.

The principal advantage of this alternative is the avoidance of all construction-related environmental disturbances, including soil disturbance, dust generation, noise and vibration, increased traffic and the generation of construction waste. There would be no immediate additional pressure on the road drainage network or on the solid waste management services of the area.

However, the no-project alternative carries significant disadvantages that substantially outweigh these limited benefits. The pressing housing need within the Awka South area would remain unaddressed. The opportunities for employment creation, economic stimulation and local fiscal revenue generation associated with the project would be foregone. The project site, which is already partially developed and situated within a rapidly urbanising corridor characterised by active private sector investment, would be likely to attract unplanned and unregulated development in the medium to long term, potentially resulting in greater environmental harm than the proposed structured estate development including the unmanaged soil erosion, uncontrolled drainage conditions and haphazard land use practices that typically characterise informal development in peri-urban areas. Furthermore, failure to develop the site in accordance with a coherent environmental management plan would leave the environmental conditions identified in the baseline assessment, including the groundwater quality issues documented in Chapter Four, unmanaged and unmonitored. The no-project alternative is also inconsistent with the objectives of the Anambra State Environmental Management, Protection and Administration Law, 2024, and with the State Government's urban development and housing provision policies. For these reasons, the no-project alternative is not considered viable and has been rejected as the preferred option.

2.3.2 Site Alternative

Alternative locations for the proposed estate development were considered during the preliminary planning stage. The selected site at Agu Awka, Plot 36, Old Enugu/Onitsha Road, was preferred over alternative locations on the basis of several decisive favourable factors.

First, the site offers direct access via the Old Enugu/Onitsha Road, a major arterial route in Awka that is already served by an existing asphalt pavement, facilitating both construction-phase logistics and long-term access for estate residents and visitors. Second, the strategic proximity of the site to key urban infrastructure and institutions which includes the ICC, Awka, and the established commercial and institutional uses of the corridor enhances the attractiveness and market value of the proposed estate. Third, the land title over the site is clear and well documented, with EL Ehyeh Properties Limited holding valid title documentation in respect of the site, thereby eliminating the risk of land tenure disputes that could delay or complicate the project. Fourth, the site has already been partially developed, reducing the extent of vegetation clearance and land disturbance required for the establishment of the estate infrastructure. Fifth, the site falls within a zone that is consistent with the land-use pattern of the Old Enugu/Onitsha Road corridor, reducing the risk of land-use conflicts with neighbouring properties and ensuring compatibility with the prevailing development character of the area.

Alternative sites that were considered did not offer the same combination of accessibility, infrastructure proximity, land tenure security and partial development status. Relocating the project to an alternative site would impose additional land acquisition and infrastructure costs, delay project implementation and potentially introduce new environmental and social challenges associated with the development of less accessible or less strategically located land. The selected site is accordingly confirmed as preferred on technical, environmental and socio-economic grounds.

2.3.3 Design Alternative

Various layout and design configurations for the estate were assessed in order to arrive at an optimal balance between land utilisation efficiency, environmental performance, livability and compliance with applicable planning standards and with the landscaping and setback obligations of the Anambra State Environmental Management, Protection and Administration Law, 2024. Options considered ranged from low-density development with large individual

plots to higher-density configurations with smaller plot sizes and greater provision for communal spaces.

Low-density configurations would require a disproportionately large area of land for equivalent housing output, resulting in higher infrastructure costs per plot and reduced economic viability. Excessively high-density configurations, on the other hand, would risk creating congested conditions within the estate, placing undue pressure on shared drainage, waste and utility services and reducing the attractiveness and marketability of the plots.

The preferred design achieves an appropriate balance between these considerations. The estate layout, covering the available area of 11,759.44 square metres, provides adequately sized residential plots for individual development; defined internal asphalt access roads and circulation routes; a perimeter security fence with a controlled entrance point and manned security post; surface drainage channels designed in conformity with the requirements of the Anambra State Clear Drainage and Inland Flood Management Agency; provision for open and green spaces including landscaping and tree planting in fulfilment of the obligations imposed by Sections 79, 80 and 82 of the 2024 Law; and utility installations including electricity connections to the EEDC grid and a centralised water supply borehole and well. This design option is considered optimal as it maximises the social utility of the development and ensures the minimum environmental footprint consistent with a functional, compliant and marketable residential estate.

2.3.4 Construction Technology Alternative

Alternative construction methods and materials were evaluated, including conventional reinforced concrete and masonry blockwork, prefabricated structural systems and alternative roofing and finishing materials for the estate infrastructure works.

Prefabricated and industrialised building systems were considered but rejected on grounds of their significantly higher capital cost, the limited availability of prefabricated components within the local Awka construction supply chain, the reduced familiarity of locally available contractors and artisans with these systems and potential challenges of maintenance and repair over the operational life of the structures.

The preferred option involves the use of conventional reinforced concrete and masonry blockwork construction methods, employing materials sourced from approved local suppliers, combined with modern construction management techniques designed to enhance efficiency, quality and compliance with applicable building and environmental standards. This choice is justified by the ready availability of materials within the local construction market, the established competence of local contractors in these techniques, the relative ease and economy of long-term maintenance and the positive contribution to local economic activity through the procurement of locally produced materials.

2.4 Preferred Option

Having regard to the foregoing analysis, the proposed residential estate development on the selected site at Agu Awka, using the adopted layout design and conventional construction technology, and subject to the full and diligent implementation of the environmental mitigation and management measures set out in this Report, is confirmed as the most feasible, sustainable and socially beneficial option available. It effectively balances the housing need of the target population with the imperative of environmental protection and economic viability. It is consistent with the development objectives of both the proponent and the relevant government authorities at the federal and state levels, and with the overarching objectives of the Anambra State Environmental Management, Protection and Administration Law, 2024.

2.5 Summary and Conclusion

The proposed residential estate development at Agu Awka, Awka South Local Government Area, Anambra State, is firmly justified on social, economic and environmental grounds. It responds directly and concretely to the pressing need for improved and organised residential accommodation in Awka South; supports employment generation and local economic development during construction; promotes orderly, structured and planned urban growth in a rapidly developing corridor that is home to significant State institutions; and is consistent with the applicable land-use policies and environmental management objectives of Anambra State. The project directly advances the Section 4 objectives of the Anambra State Environmental Management, Protection and Administration Law, 2024, by contributing to the provision of a clean, safe and healthy residential environment for future residents and enabling citizens to access the environment for residential purposes. The systematic evaluation of alternatives

confirms that proceeding with the project on the selected site, with the adopted design and construction approach, and subject to rigorous environmental management and full regulatory compliance with the EIA Act, Cap E12, the Environmental Impact Assessment Procedures and Charges Regulations, 2021, and the Anambra State Environmental Management, Protection and Administration Law, 2024, represents the most appropriate and sustainable means of achieving the project's development objectives.

CHAPTER THREE

PROJECT DESCRIPTION

3.1 Project Philosophy

The philosophy underpinning the proposed Zion Garden Residence is anchored in the provision of decent, safe and adequately serviced residential accommodation within a planned, orderly and environmentally responsible framework. The project has been conceived as a deliberate response to the persistent and widening imbalance between housing demand and supply in Awka, particularly for individuals and households of low- to middle-income status who constitute a substantial proportion of the city's economically active population. The project directly advances the objective of Section 4 of the Anambra State Environmental Management, Protection and Administration Law, 2024, to provide a clean, safe and healthy environment for all residents of Anambra State and to enable citizens to access the environment for residential purposes.

The project adopts a sustainability-driven approach in which social needs, environmental protection and economic viability are considered together from the design stage through construction and into long-term operation. Emphasis has been placed on efficient and rational land use; the maintenance of adequate open and green spaces in conformity with the landscaping obligations imposed by Section 79 of the 2024 Law; the provision of a proper drainage and stormwater management system consistent with the mandate of the Anambra State Clear Drainage and Inland Flood Management Agency established under Part 3 of that Law; sound waste management arrangements in compliance with the requirements of the Anambra State Waste Management Authority (ASWAMA) established under Part 6; and conformity with all applicable planning, building and environmental standards.

The development is guided by the conviction that housing should not merely provide physical shelter but should contribute positively to the public health, safety, security and community cohesion of its occupants. The estate therefore integrates residential plots with shared supporting infrastructure; defined internal access roads, a perimeter security fence with a

controlled entrance, surface drainage channels and utility installations creating a structured, functional and secure living environment that will remain manageable, maintainable and environmentally compliant throughout its operational life.

3.2 Project Identification

The following details identify the proposed project for the purposes of this Environmental Impact Assessment Report.

Table 3.1: Project Identification table

Parameter	Details
Project Name	Zion Garden Residence (Zion G.R.A.)
Project Type	Residential Plot Estate Development
Project Proponent	EL Ehyeh Properties Limited
RC Number (CAC)	RC: 1499498 (incorporated 31 May 2018)
Chief Executive Officer	Ndefo Chinonso Hillary
Proponent Contact	Eleyehpropertiesltd2@gmail.com
Registered Office Address	Agu Awka, Opposite APGA Headquarters, Old Enugu/Onitsha Road, Awka South, Anambra State
Project Location	Plot 36, Agu Awka, Old Enugu/Onitsha Road, Awka South Local Government Area, Anambra State
Total Site Area	11,759.44 square metres (approximately 1.18 hectares)
Land Acquisition	Direct purchase and government allocation; supported by Certificate of Occupancy and Deed of Assignment
EIA Category	Mandatory Study (EIA Act, Cap E12; ANSEMPAL Law 2024, Schedule 8)
EIA Consultant	Stellovate Limited
Report Reference	SV/EIA/AN/026001
Date of Report	February 2026

3.3 Project Location and Site Description

The proposed Zion Garden Residence (Zion G.R.A.) project site is located along the Old Enugu/Onitsha Road, Agu Awka, at latitude 6.232102°N and longitude 7.112684°E, within Awka South Local Government Area, Anambra State. The proponent, EL Ehyeh Properties

Limited, holds a Certificate of Occupancy and Deed of Assignment over the site, which covers a total area of 11,759.44 square metres (approximately 1.18 hectares).



Figure 3.1: Google Location (Source: Google Maps, 2026)



Plate 1: Picture of Site from inner left corner



Plate 2: Picture of Site from back fence



Plate 3: Picture of the Site entrance

3.3.1 Administrative Location

The proposed Zion Garden Residence is located at Agu Awka, directly opposite the headquarters of the All Progressives Grand Alliance (APGA) on the Old Enugu/Onitsha Road,

within Awka South Local Government Area of Anambra State. The site is situated within a few blocks of the International Convention Centre (ICC), Awka, a major public event facility and an important sensitive receptor for noise, dust and vibration management purposes, and in the near vicinity of the Rotic Aluminium Extrusion facility. The Old Enugu/Onitsha Road is a major arterial route carrying a significant volume of daily vehicular traffic and constituting one of the principal development corridors for private sector investment in the Awka urban area.

The project falls within the regulatory jurisdiction of the Anambra State Ministry of Environment and the agencies established under the Anambra State Environmental Management, Protection and Administration Law, 2024 principally the EIA Committee established under Section 224 of that Law, ASWAMA, the Wastewater Management Office and the Anambra State Environmental Protection Unit (ANSEMPAL) at the state level, and the Federal Ministry of Environment and the National Environmental Standards and Regulations Enforcement Agency (NESREA) at the federal level.

3.3.2 Geographical Co-ordinates

Geographical co-ordinates were recorded at the project site using a GPS compass during field investigations conducted in January 2026. Readings were taken at five locations: four soil sampling points (SS1 through SS4) distributed across the project site to provide representative spatial coverage, and one reference point at the midpoint of the extreme back boundary fence.

The recorded co-ordinates are presented in Table 3.2 below.

Table 3.2: GPS Co-ordinates of Project Site Reference Points

Ref. Point	Latitude (N)	Longitude (E)	Elevation (ft asl)	Description / Position on Site
SS1	6°13'53" N	7°6'50" E	190	Soil Sample Point 1 - south-eastern zone of site
SS2	6°13'50" N	7°6'47" E	180	Soil Sample Point 2 - south-western zone of site
SS3	6°13'59" N	7°6'47" E	190	Soil Sample Point 3 - northern zone of site
SS4	6°13'57" N	7°6'44" E	190	Soil Sample Point 4 - north-western zone of site
MP	6°13'52" N	7°6'48" E	160	Midpoint of Extreme Back Boundary Fence

Note: Co-ordinates were recorded using a GPS compass during field visits conducted in January 2026. Readings are presented in degrees, minutes and seconds (DMS) format. The site spans approximately 40 seconds of latitude (6°13'50" to 6°13'59"N) and approximately 6 seconds of longitude (7°6'44" to 7°6'50"E), at elevations of 160 to 190 feet above mean sea level.

3.3.3 Site Boundaries and Surroundings

The project site covers a total land area of 11,759.44 square metres (approximately 1.18 hectares). The site is a partially developed plot with defined boundary features. The principal vehicular access is from the Old Enugu/Onitsha Road, with the intended estate entrance directly opposite the APGA headquarters. The site is situated within a zone of mixed and rapidly evolving land use characterised by concurrent residential, commercial and institutional development activity.

The immediate surroundings include: to the south, the Old Enugu/Onitsha Road and the APGA headquarters; in the broader vicinity to the north-east, the International Convention Centre (ICC), Awka; nearby, the Rotic Aluminium Extrusion facility; and to the north and west, ongoing residential and commercial construction projects representative of the general development trend along the corridor. The proximity of the ICC is of particular significance for this EIA, as it underscores the paramount importance of effective dust and noise management during the construction phase and underpins the advance-notification commitments documented in the ESMP in Chapter Seven.

3.3.4 Land Acquisition and Tenure

The project site at Plot 36, Agu Awka, was acquired by EL Ehyeh Properties Limited through direct purchase from the previous owner and through government allocation. The proponent holds a valid Certificate of Occupancy and a Deed of Assignment in respect of the site. The land title is clear and unencumbered, eliminating the risk of land disputes and associated social conflict, and supporting the long-term environmental management viability of the estate.

3.4 Project Phases

The proposed Zion Garden Residence will be developed and operated over four principal phases, namely: (i) the Site Preparation and Mobilisation Phase; (ii) the Construction Phase; (iii) the Operational Phase; and (iv) the Decommissioning and End-of-Life Phase. Each phase

is characterised by distinct activities, environmental interactions and management requirements.

3.4.1 Phase 1 Site Preparation and Mobilisation

This phase covers all activities preliminary to main civil works construction. It involves the obtaining of all required regulatory approvals (EIA Certificate from the Federal Ministry of Environment and EIA Preliminary Report from the EIA Committee, as required by Section 233 of the 2024 Law); the procurement, negotiation and contracting of a main civil works contractor and sub-contractors; the physical mobilisation of construction personnel, equipment and materials to the site; the establishment of temporary site facilities; and the implementation of all pre-construction erosion and silt control measures. This phase has an estimated duration of one to two months.

3.4.2 Phase 2 Construction Phase

The construction phase encompasses all principal civil engineering and installation activities required to deliver the estate infrastructure, as described in detail in Section 3.5. This phase has an estimated duration of eleven to twelve months and results in the completion and commissioning of all permanent estate infrastructure, including the perimeter fence and gate, internal roads, drainage channels, utility installations and landscaping. The construction phase terminates with the pre-commissioning water quality analysis and the formal handover of the completed estate infrastructure to the proponent.

3.4.3 Phase 3 Operational Phase

The operational phase is the principal long-term phase, during which individual plot holders occupy their purchased plots, develop and occupy their residential houses and participate in the estate community. This phase is expected to span several decades, during which the estate management will maintain shared infrastructure, manage waste and wastewater services, enforce estate rules, submit regulatory performance reports and engage ongoing stakeholder communication, as specified in the ESMP. Key operational activities are described in Section 3.6.

3.4.4 Phase 4 Decommissioning and End-of-Life

Whilst formal decommissioning of a residential estate development of this nature does not typically arise within a foreseeable planning horizon, residential estates generally adapt, evolve and persist over many decades and the possibility of eventual changes in land use, redevelopment or the need for major infrastructure renewal is acknowledged. Should decommissioning of the estate or any significant component of the estate infrastructure become necessary in the long term, the proponent and estate management commit to preparing a site-specific Decommissioning Management Plan in consultation with the relevant regulatory authorities at that time. Such a plan would address: the safe demolition and removal of structures; the management of demolition waste in accordance with applicable provisions of the 2024 Law (including Sections 136 and 137); site clearance, soil restoration and, where necessary, remediation; and appropriate stakeholder notification and consultation in accordance with Part 12 of the 2024 Law.

3.5 Construction Activities and Civil Works

Construction activities will be implemented in defined sequential stages to ensure safety, efficiency and environmental compliance at all times, in accordance with the requirements of Part 8 of the Anambra State Environmental Management, Protection and Administration Law, 2024. No construction activity shall commence until all required regulatory approvals have been received and the contractor has submitted a site-specific ESMP approved by the Site Environmental Officer. The principal civil works stages are described below.

3.5.1 Stage 1 Site Preparation and Erosion Control

Prior to any earthworks disturbance, the contractor will: establish the temporary site compound (site office, ablution facilities, materials storage, fuel storage with secondary containment); install perimeter hoarding at the site boundary on the Old Enugu/Onitsha Road frontage; implement all pre-construction erosion control measures, including silt traps and bunded earth berms at the downslope margins of the site; strip and stockpile topsoil from areas to be disturbed (for later reinstatement in landscaping areas); and undertake the setting out of the estate layout in accordance with the approved plan. Phased clearance will be adopted, limiting the area of bare soil exposed at any one time to no more than that required for the immediately upcoming construction activity. All cleared vegetation and surface materials will be removed

from the site to an approved disposal facility in accordance with Section 145 of the 2024 Law. Open burning of cleared materials is strictly prohibited under Section 136 of the Law.

3.5.2 Stage 2 Perimeter Fence and Entrance Gate Construction

Construction of the perimeter security fence will be the first permanent civil work to be undertaken, defining and securing the site boundary and establishing the enclosed working area for all subsequent construction activities. The fence will consist of reinforced sandcrete blockwork on a reinforced concrete strip footing, constructed to a height adequate for estate security. Fence columns will be reinforced with vertical steel starter bars cast into the foundation and embedded in pilasters at regular centres. The entrance gate will be fabricated from steel or equivalent approved material and installed on substantial concrete-embedded steel posts. The manned security gatehouse will be a small single-room masonry structure with a concrete slab roof, providing weather-protected accommodation for gate security staff. The entrance design will accommodate the passage of both construction vehicles during the construction phase and private passenger vehicles during the operational phase.

3.5.3 Stage 3 Internal Road Earthworks and Drainage Construction

Internal access roads will be constructed to an asphalt surface standard. Earthworks will be undertaken in three sub-stages: (a) topsoil strip and sub-grade formation by excavator and motor grader, including cut-and-fill operations to achieve design profile and cross-fall; (b) compaction of the sub-grade by vibratory roller to the specified bearing ratio; and (c) placement and compaction of the laterite/crushed stone road base layer. Simultaneously with road earthworks, surface drainage channels will be excavated and constructed along each road corridor. Channels will be lined with precast concrete or cast in-situ concrete, with appropriate section dimensions to convey the design storm flow. Channel connections to the boundary drainage network will be made with reference to the Anambra State Clear Drainage and Inland Flood Management Agency's applicable technical standards, and any connection to the public road drainage on the Old Enugu/Onitsha Road frontage will be carried out with the Agency's prior authorisation.

3.5.4 Stage 4 Asphalt Road Surfacing

Following the completion and acceptance of the road base layer, the asphalt binder course and wearing course will be laid by an asphalt spreader / paver in accordance with the approved road design specification. Asphalt will be sourced from an approved asphalt plant and transported to site by insulated tipper trucks; laying will be carried out at the specified temperature. Road edges will be defined by concrete kerbing prior to asphalt laying. Road surfaces will be finished with directional markings and speed control features appropriate to an estate environment.

3.5.5 Stage 5 Utility Installations

Utility installation will proceed in parallel with or immediately following road surfacing, in order to avoid cutting newly laid asphalt wherever possible. The EEDC electricity connection will be made in accordance with the EEDC connection specifications and approval, and internal reticulation cabling will be installed along defined corridors within the estate to provide a connection point at or near each plot boundary. The water supply borehole or covered well will be drilled to the design depth by a licensed drilling contractor, cased, developed and equipped with a submersible pump and pump house structure. The water distribution network comprising HDPE or PVC pressure pipework will be installed along defined utility corridors to serve each plot with a connection point. All trench excavations for utilities will be backfilled and compacted immediately after pipe or cable laying, and the road surface restored where applicable.

3.5.6 Stage 6 Landscaping and External Works

Upon completion of all civil and utility works, open spaces within the estate including road verges, plot boundaries and designated green areas will be prepared and planted with appropriate indigenous tree species and ornamental vegetation in fulfilment of the obligations imposed by Section 79 of the 2024 Law (landscaping of all tenement perimeter areas) and Section 80 (maintaining a greened or paved three-metre setback between the fence line and drainage). Tree species will be selected in consultation with the Anambra State Leisure Parks, Gardens and Beautification Agency and, where guidance is available, with the Anambra State Erosion, Watershed and Climate Change Agency (ANSEWCCA), giving preference to deep-rooted indigenous species with erosion-stabilising and carbon sequestration benefits.

Stockpiled topsoil will be reinstated in planting areas. Road markings, estate signage, waste bin emplacements and any remaining external finishes will be completed in this stage.

3.5.7 Stage 7 Testing, Commissioning and Handover

The final construction stage encompasses the testing and commissioning of the water supply system, including a pre-commissioning water quality analysis by an accredited laboratory in accordance with the Nigerian Industrial Standard NIS 554:2015. Distribution of water to plots will not commence until the analysis confirms compliance with applicable standards; if non-compliance is identified, an appropriate treatment system (at minimum filtration and chlorination) will be installed and re-tested before distribution begins. The drainage system will be tested under a controlled flow or design rainfall scenario to verify that channels drain adequately and that no ponding or flooding occurs within the estate. All defects identified during snagging will be corrected before handover. The temporary site compound will be fully decommissioned, the area rehabilitated and the site left in a clean, safe and orderly condition before formal handover to the proponent.

3.6 Key Plant and Equipment

The following principal items of plant and equipment are anticipated for use during the construction phase. Equipment will be sourced from the appointed main civil works contractor and their sub-contractors, all of whom must demonstrate that equipment is properly registered, road-worthy and maintained in good mechanical condition before commencement of site activities. A pre-mobilisation equipment inspection checklist, forming part of the contractor's site-specific ESMP, will be completed and approved by the SEO before any equipment is permitted on site.

Table 3.3: Key Construction Plant and Equipment

Equipment / Plant	Estimated Quantity	Principal Use
Excavator / Backhoe Loader	1-2 units	Excavation for drains, road sub-grade formation, fence foundations
Vibratory Road Roller (8–10 t)	1 unit	Sub-base and sub-grade compaction for internal roads
Motor Grader	1 unit	Earthworks grading and road formation levelling

Tipper Trucks (5–7 m ³)	3–5 units	Haulage of laterite fill, aggregate, spoil and construction waste
Concrete Mixer (0.5 m ³)	2–3 units	Concrete production for fence, drainage channels, gatehouse
Plate Compactor / Wacker	2 units	Compaction in confined areas (trench backfill, footings)
Pneumatic Poker Vibrator	2 units	Consolidation of concrete pours for structural elements
Asphalt Spreader / Paver	1 unit (hired)	Laying of asphalt wearing course for internal roads
Water Bowser / Tank Truck (5,000 L)	1 unit	Dust suppression by water spraying on unpaved areas
Standby Diesel Generator (30–50 kVA)	1 unit	Temporary power for site office, lighting and tools
Diesel Water Pump	1–2 units	Dewatering of excavations during rainy season
Borehole Drilling Rig	1 unit (hired)	Drilling of the estate water supply borehole
Transit / Truck-Mounted Concrete Mixer	1 unit (hired)	Ready-mixed concrete supply for larger pours
Hand Tools and Light Equipment	Various	General masonry, steel fixing, carpentry and plumbing works

Note: Actual quantities will be determined by the appointed contractor in accordance with the approved construction programme. All diesel-powered plant must be maintained in good mechanical order and regularly serviced to minimise exhaust emissions, in accordance with Section 287 of the Anambra State Environmental Management, Protection and Administration Law, 2024.

3.7 Key Facilities

3.7.1 Permanent Estate Facilities

The following permanent facilities will be constructed as part of the estate infrastructure:

- i. Perimeter security fence - reinforced sandcrete blockwork, full perimeter of the 11,759.44 m² site, to a height appropriate for security and aesthetics;
- ii. Entrance gate and security gatehouse - steel vehicular gate with manual and/or motorised operation, flanked by a manned concrete masonry gatehouse providing 24-hour security coverage at the single point of estate access from the Old Enugu/Onitsha

- Road; CCTV cameras will be installed at the entrance gate and along key positions within the estate to support continuous surveillance and deter unauthorised access
- iii. Internal asphalt access roads - a network of asphalt-surfaced roads providing vehicular and pedestrian access to all residential plots, designed to accommodate normal private vehicle traffic and periodic service and emergency vehicles;
 - iv. Surface stormwater drainage channels - open concrete-lined channels along all internal road corridors and at the perimeter, discharging to the boundary drainage network, designed to prevent flooding and waterlogging within the estate;
 - v. Estate water supply system - a centralised borehole or covered well equipped with a submersible pump, pump house structure, overhead storage tank (where required by the design) and distribution pipework to plot connection points, providing the primary source of domestic water for the estate;
 - vi. EEDC electricity connection and internal reticulation - a metered connection to the EEDC grid with internal cabling and distribution to plot connection points, Security LED floodlights will be installed at the entrance gate, along the perimeter fence and at internal road junctions to provide adequate illumination during night-time hours and to enhance resident safety, providing a reliable electricity supply to all plots within the estate;
 - vii. Landscaped open spaces and planted areas - designated areas of topsoil-restored open space planted with indigenous trees and ornamental vegetation, fulfilling the landscaping, setback and tree-planting obligations of Sections 79, 80 and 82 of the 2024 Law; and
 - viii. Waste collection point - a designated covered waste storage area within the estate for the temporary storage of segregated domestic solid waste pending collection by the ASWAMA-licensed Private Waste Collector.
 - ix. Solar panel system: solar photovoltaic panels installed on the gatehouse roof or other suitable common-area structure to generate electricity for powering the estate borehole pump, security lighting and other common infrastructure, reducing grid electricity demand and providing backup power during outages

3.7.2 Temporary Construction Facilities

The following temporary facilities will be established during the construction phase and decommissioned prior to handover:

- i. Site office - a prefabricated cabin or rented structure within or immediately adjacent to the site boundary, providing administrative and supervisory accommodation for the site management team;
- ii. Construction materials storage yard - a defined area within the site, covered where necessary to protect weather-sensitive materials such as cement from moisture degradation;
- iii. Fuel storage area - a bunded secondary containment area for the storage of diesel fuel in appropriately labelled and secured containers, positioned at a minimum safe distance from any drainage channels or water features;
- iv. Workers' sanitary facilities - at least two chemical portable toilet units per every twenty workers on site, maintained in a clean and hygienic condition by a licenced dislodger under contract; and
- v. Concrete mixing area - a hardened or lined working platform for concrete mixing operations, with provision for the containment and managed disposal of washout water so that it does not discharge to drains or watercourses.

3.8 Technical Processes

3.8.1 Earthworks and Road Formation

Earthworks for road formation and drainage channel construction constitute the most technically demanding aspect of the construction phase and the greatest source of environmental risk (dust, erosion, noise and vibration). The earthworks process will proceed through: topsoil stripping and segregated stockpile; sub-grade excavation or fill to achieve the design formation level; proofrolling of the sub-grade by vibratory roller to detect and rectify soft spots; placement of the geotextile separation layer where specified; placement and compaction of the crushed stone or laterite road base in layers of not more than 200 mm compacted thickness; testing of compaction by Dynamic Cone Penetrometer (DCP) to confirm the specified California Bearing Ratio (CBR); placement of the asphalt binder and wearing courses by paver; and final road finishing, kerbing and marking. All cut spoil not reusable as

road fill will be transported by tipper truck to an approved disposal location in accordance with Section 145 of the 2024 Law.

3.8.2 Concrete and Masonry Works

Concrete and masonry works for the perimeter fence, drainage channels, gatehouse and miscellaneous structural elements will be carried out using conventional reinforced concrete and sandcrete blockwork construction. Concrete mixes will be designed to achieve the specified characteristic strength (minimum C20/25 for structural elements). Concrete will be batched at a dedicated mixing area or supplied as ready-mixed concrete from a batching plant, as determined by the contractor. Curing of concrete will be achieved by wet hessian covering or curing compound, and concrete will not be stripped of formwork before the specified minimum curing period. All blockwork will be laid in running bond with fully filled mortar joints. Steel reinforcement will be cut, bent and fixed by qualified steel fixers before concrete is poured.

3.8.3 Borehole Drilling and Water Supply

The estate water supply borehole will be drilled by a licensed drilling contractor to the depth necessary to penetrate a reliable aquifer zone, based on available hydrogeological information and, where available, electrical resistivity survey data for the area. The borehole will be cased with uPVC or steel casing, grouted to prevent surface contamination, fitted with a stainless steel screen in the aquifer zone, and developed by surging and pumping to yield clean water before the pump is installed. The pump will be selected to deliver the design flow rate at the required pressure for distribution to all plot connection points. All water supply pipework within the estate will be of approved food-grade HDPE or PVC material, pressure-tested before backfilling and installed with adequate cover depth to prevent damage. The pre-commissioning water quality analysis (described in Section 3.5.7) will be conducted before any water is distributed for human consumption.

3.9 Utilities

3.9.1 Water Supply

Water supply to the estate will be provided through a centralised borehole or covered well installation from which treated water will be distributed to individual plots through an internal

reticulation network. The baseline water quality assessment conducted as part of this EIA (presented in Chapter Four) identified that the existing site well water does not meet the requirements of the Nigerian Industrial Standard NIS 554:2015 for drinking water quality in several key parameters including the Total Suspended Solids (209.5 mg/L against the standard of 30 mg/L), BOD5 (8.99 mg/L against 3 mg/L), total coliform count (140 MPN/100 mL) and objectionable physical characteristics of odour, taste and turbidity. This confirms the absolute necessity of adequate water treatment before any water from this or a similar source is distributed for human consumption. The proponent commits to conducting a pre-commissioning water quality analysis by an accredited laboratory before the water supply system is brought into operation and to installing an appropriate treatment system (comprising at minimum filtration, disinfection by chlorination and, where required, ultraviolet treatment) if the raw water quality does not meet NIS 554:2015. Individual plot holders will be required to make their own plot-level water storage provisions. As and when reliable public supply from the Anambra State Water Corporation becomes available on the Old Enugu/Onitsha Road, a supplementary connection to the public system will be established.

3.9.2 Electricity Supply

Electricity will be obtained from the public supply network of the Enugu Electricity Distribution Company (EEDC), with an internal reticulation system distributing supply to individual plots. Each plot holder will be responsible for their own internal electrical installation in accordance with the applicable standards of the Nigerian Electricity Regulatory Commission (NERC). Standby diesel generators may be used by individual plot holders and by the estate management for essential services during grid outages; however, in accordance with the noise management provisions of the ESMP, the operation of generators will be restricted to daytime hours (07:00 to 20:00) and all generators must be fitted with functional acoustic silencers, in compliance with Section 282 of the 2024 Law. At the estate management level, Solar PV system will power common facilities (borehole pump, lighting, gatehouse), reducing reliance on grid and diesel generators. Individual plot holders are actively encouraged to consider grid-tied or standalone solar photovoltaic systems as a means of reducing reliance on diesel-fuelled standby power. All external and common-area lighting within the estate, including security lights at the perimeter and entrance, will use LED fittings to reduce electricity consumption and minimise reliance on standby generators

3.9.3 Wastewater and Sewage Management

Wastewater and sewage management within the estate will be addressed at the level of individual plots. Each plot holder will be required, before commencing occupation of their plot, to install an adequately designed and properly constructed soak-away pit system in accordance with applicable Nigerian design standards and the technical requirements of the Wastewater Management Office established under Part 7 of the 2024 Law. In fulfilment of the specific obligation imposed by Section 216(1) of that Law, which requires any estate developer accommodating fifty or more persons to connect to the sewage system in the catchment area or obtain a wastewater clearance from the Wastewater Management Office before the estate is occupied, the proponent commits to submitting a wastewater clearance application no later than three months before the anticipated date of first occupation of any plot within the estate. Each soak-away pit installation must maintain a minimum safe separation from any borehole or water supply well, in order to protect groundwater quality from contamination. Stormwater from the estate will be managed separately through the surface drainage channels described in Section 3.5.3.

3.9.4 Solid Waste Management

Domestic solid waste generated by estate occupants will be managed through the engagement of a licensed Private Waste Collector registered with ASWAMA in accordance with Section 152 of the 2024 Law. Individual plot holders will be required to store domestic waste in covered bins at the plot level. A designated communal waste storage area within the estate will accommodate bins pending collection. The estate management will procure a written contract with an ASWAMA-licensed collector specifying collection frequency, waste categories covered and approved disposal sites. In accordance with Section 136 of the 2024 Law, open burning of waste is strictly prohibited within the estate at all times. All waste will be disposed of at ASWAMA-approved sites only, in accordance with Section 137.

3.10 Waste Streams and Handling Approach

The proposed project will generate waste streams during both the construction and operational phases. The characterisation of anticipated waste streams, estimated quantities and proposed management and handling approaches are summarised in Table 3.4 below.

Table 3.4: Anticipated Waste Streams and Handling Approach

Waste Stream	Phase	Estimated Quantity	Management / Disposal Approach
Excavated spoil and laterite	Construction	200–400 m ³	Reuse as fill; surplus transported to approved site per Section 145, 2024 Law
Concrete / masonry debris	Construction	Moderate	Segregated; reusable aggregate recovered; remainder to approved disposal site
Timber and steel offcuts	Construction	Low–Moderate	Segregated by material; steel salvaged; timber reused or removed by licensed contractor
Packaging waste (bags, plastics, cardboard)	Construction	Low	Segregated; no burning (Section 136, 2024 Law); removed by licensed contractor
Sanitary waste from site toilets	Construction	Low (continuous)	Portable chemical toilets; dislodged by ASWAMA-licensed tanker as required
Wastewater from concrete curing / mixing	Construction	Low	Contained within site; directed to soak pits or evaporation areas; not discharged to drains
Domestic solid waste — residents	Operational	~0.5 kg/person/day	Stored in covered bins; collected by ASWAMA-licensed PWC; disposed at approved site only
Domestic wastewater and sewage	Operational	Estimated ~80–100 L/person/day	Individual soak-away pits per plot; Section 216(1) wastewater clearance to be obtained
Green / garden waste	Operational	Low–Moderate (periodic)	Composted on-site or collected by licensed contractor; no open burning
Maintenance waste (paint, lubricants)	Operational	Very low	Stored in labelled containers; disposed of through licensed hazardous waste handler
Used engine oil / lubricants (generators)	Operational	Very low	Stored in sealed containers; removed by licensed operator; not discharged to drains

Note: Quantities are indicative estimates based on typical residential estate projects of equivalent scale. Actual quantities will be confirmed through contractor waste management reporting. The hierarchy of waste management (reduce, reuse, recycle, recover, dispose) shall be applied to all waste streams throughout both phases.

3.11 Raw Material Requirements

Table 3.5 below summarises the principal raw materials and construction inputs required for the proposed project, with indicative quantity estimates, sources and intended applications. All raw materials will be sourced from approved, legitimate suppliers. Preference will be given to

locally available materials from Awka South, Anambra South Senatorial District and the broader Anambra State market, in order to minimise transportation impacts, support local enterprise and reduce the project's overall carbon footprint.

Table 3.5: Principal Raw Material Requirements

Raw Material / Input	Estimated Quantity	Source	Principal Application
Ordinary Portland Cement (OPC 42.5)	~250–350 bags (50 kg)	Local suppliers, Awka	Fence blockwork, drainage channels, gatehouse, road kerbs
Laterite / Gravel Fill	~400–600 m ³	Approved quarry / borrow pit	Road sub-base, sub-grade fill and embankment
Sharp Sand (Fine Aggregate)	~80–120 m ³	Local approved source	Concrete mixes, mortar, plaster
Coarse Aggregate (19 mm granite)	~60–100 m ³	Approved quarry	Structural concrete for fence, channels, gatehouse slab
Hollow Sandcrete Blocks (9" and 6")	~4,000–6,000 units	Local block industry	Perimeter fence wall, security gatehouse walls
Reinforcing Steel (Y10 – Y16)	~5–8 tonnes	Steel merchant, Awka/Onitsha	Fence footings/columns, drain lintel, gatehouse slab
Asphalt / Bituminous Mix (hot-mix)	~400–600 tonnes	Approved asphalt plant	Internal road wearing and binder course
Road Base Aggregate (crushed stone)	~200–350 m ³	Approved quarry	Road base layer under asphalt
Precast Concrete Drain Covers / Channels	As required per design	Local supplier	Surface drain covers and channel lining segments
Diesel Fuel (AGO)	~4,000–6,000 L (construction phase)	Licensed petroleum dealer	Construction plant, equipment and standby generator
Water (construction use)	~20–40 m ³ /week	Water bowser / tanker	Dust suppression, concrete mixing, curing, workers
Electrical Cables and Conduits	Per EEDC design	Approved electrical supplier	EEDC connection, internal reticulation to plots
PVC / HDPE Pipes	Per design	Approved plumbing supplier	Water distribution reticulation from borehole to plots

Paint and Surface Finishes	As required	Local supplier	Gatehouse, fence capping, road markings and signage
Topsoil and Planting Medium	~20–40 m ³	On-site reclamation / supplier	Landscaping, tree-planting zones per Section 79 & 82, ANSEMPAL Law
Indigenous Tree Seedlings	Per landscaping plan	ANSEWCCA-approved nursery	Estate landscaping and annual tree planting (Section 82)
Solar photovoltaic panels and mounting	As per system design (indicative 4-8 panels for common area)	Approved solar equipment supplier	Common-area electricity generation for borehole pump, security lights and gatehouse

Note: Quantities are indicative and based on preliminary design assumptions for a residential estate of 11,759.44 m². Final quantities will be confirmed by the detailed engineering design and bills of quantities prepared by the appointed contractor. All materials must be sourced from suppliers with valid CAC registration and, where applicable, with NAFDAC, SON or other regulatory approvals relevant to their product category.

3.12 Health, Safety and Environment (HSE) Considerations

Health, safety and environmental management will be applied rigorously throughout all phases of the project. The HSE provisions described in this section are consistent with the Factories Act, Cap F1, the Nigerian Employee Compensation Act, applicable International Labour Organisation (ILO) occupational health and safety conventions, and the Environmental, Social, Health and Safety Management Plan (ESHSMP) framework established under Part 8 of the Anambra State Environmental Management, Protection and Administration Law, 2024. A site-specific HSE Plan forming part of the contractor's ESMP must be prepared, approved by the Site Environmental Officer (SEO) and communicated to all site personnel before mobilisation.

3.12.1 Construction Phase HSE

The following HSE provisions will be implemented and maintained throughout the construction phase:

- i. **Personal Protective Equipment (PPE):** All workers on site must at all times wear, as a minimum, safety boots, high-visibility vests and hard hats. Additional PPE including dust masks or respirators (FFP2 class minimum), eye protection, hearing protection and gloves will be provided and enforced at all times during activities that generate dust, noise, flying particles or exposure to hazardous materials. The provision of PPE is the

- direct responsibility of the main contractor and sub-contractors, who shall bear the cost of supply, maintenance and replacement.
- ii. HSE Officer: A qualified HSE Officer will be present on site at all times during active construction. The HSE Officer is responsible for daily site safety inspections, accident prevention, first aid coordination, incident investigation and the conduct of weekly toolbox talks. The HSE Officer reports directly to the site manager and works in close coordination with the SEO.
 - iii. Site Environmental Officer (SEO): A qualified SEO must be appointed by the proponent before site mobilisation and must be present on site or immediately contactable at all times during active construction. The SEO is responsible for ESMP compliance monitoring, environmental incident reporting, liaison with ANSEMPAL, ANSEWCCA, ASWAMA and other regulatory agencies, and for the submission of quarterly performance reports to the EIA Committee as required by Section 225(r) of the 2024 Law.
 - iv. Inductions and Toolbox Talks: Every new worker must receive a site safety induction covering site rules, emergency procedures, PPE requirements and environmental obligations before commencing any work. Weekly toolbox talks will be conducted by the HSE Officer on specific safety and environmental topics relevant to the activities underway that week.
 - v. First Aid and Emergency Response: A trained first aider must be present on site at all times during active construction. A stocked first aid kit compliant with the Factories Act requirements will be maintained at the site office and at each active working area. An emergency response procedure, including the nearest hospital address and emergency contact numbers, will be posted prominently at the site entrance and site office.
 - vi. Excavation and Trench Safety: All excavations deeper than 1.2 metres will be shored or battered to a safe angle to prevent collapse. No worker will enter any unshored excavation deeper than 1.2 metres. Excavations will be guarded with safety barriers and warning tape when not actively worked. Excavated spoil will not be stockpiled at the edge of any excavation within a distance equal to the depth of the excavation.

- vii. Fire Safety: All fuel storage areas will be equipped with appropriate dry powder fire extinguishers. No smoking will be permitted within five metres of any fuel storage area or concrete mixing area. An emergency fire evacuation plan will be posted at the site office and communicated to all workers.
- viii. Dust Management: Water spraying of unpaved traffic areas and stockpiles will be carried out using the water bowser at a minimum frequency of twice daily during dry weather and after any extended period of dry wind. All tipper trucks carrying loose materials to and from the site will be covered with tarpaulins to prevent spillage and dust generation on the public road. The speed of construction vehicles on unpaved areas within the site will be limited to 10 km/h.
- ix. Noise and Vibration Management: All active construction activities will be restricted to the hours of 07:00 to 18:00 on weekdays and 07:00 to 14:00 on Saturdays. No noisy activities (rock breaking, heavy roller compaction, piling or similar) will be conducted on Sundays or public holidays. The ICC, Awka, will be notified at least 72 hours in advance of any particularly disruptive operations such as continuous heavy roller compaction adjacent to the public road frontage.
- x. Worker Welfare and Accommodation: Construction workers will not be accommodated on-site. Workers will be responsible for their own accommodation arrangements in the community. The site will provide adequate sanitary facilities (portable toilets), clean drinking water and a rest/shading area for workers. The proponent will actively encourage the contractor to prioritise recruitment from the Awka South community.
- xi. HIV/AIDS and Communicable Disease Prevention: An occupational health awareness programme covering HIV/AIDS prevention, malaria prevention and basic hygiene will be delivered by the HSE Officer to all site workers at least once per quarter.
- xii. Incident Reporting: All occupational accidents, near-misses and environmental incidents must be reported to the SEO within 24 hours and recorded in the site incident register. Incidents causing lost time or requiring hospitalisation must be reported to NESREA, the relevant state agency and the EIA Committee within 48 hours.

3.12.2 Operational Phase HSE

During the operational phase, the estate management will implement the following HSE provisions:

- i. Estate security: Round-the-clock security coverage by trained security personnel at the entrance gatehouse and along the perimeter, with a structured shift system, incident log and communication protocol with the nearest police station, CCTV surveillance cameras covering the entrance, perimeter fence line and internal common areas will be installed and maintained in operational condition as part of the estate security infrastructure.
- ii. Electrical safety: All electrical installations within common areas of the estate must comply with IET Wiring Regulations (BS 7671) or the equivalent Nigerian standard. Periodic electrical safety inspections of common area installations will be conducted by a qualified electrical engineer at intervals of not more than two years.
- iii. Water quality monitoring: The water supply system will be subject to periodic water quality testing by an accredited laboratory, at a minimum frequency of once per six months and whenever there is reason to suspect contamination, to ensure continued compliance with NIS 554:2015.
- iv. Drainage maintenance and flood prevention: Internal drainage channels will be cleared of sediment and debris at a minimum frequency of twice per year (before the commencement of the rainy season in March–April and at the mid-season in July–August), to ensure that design drainage capacity is maintained and that flooding does not occur within the estate.
- v. Fire and emergency preparedness: Estate common areas will be equipped with fire extinguisher stations appropriate to the identified fire risks. Emergency evacuation assembly points will be designated and clearly signed. The estate manager will maintain a current emergency contact list including the nearest fire service, hospital and police station.
- vi. Generator and fuel safety: Standby generators within the estate must be sited, ventilated and maintained in accordance with the manufacturer's specifications. Fuel for generators will be stored in appropriate, labelled, sealed containers in a well-ventilated area away from drains and watercourses.

- vii. Chemical storage: Maintenance chemicals (lubricants, cleaning agents, pest control materials) will be stored in locked, labelled, ventilated storage areas, with an inventory record maintained by the estate manager. Disposal of used chemicals, lubricants and empty containers will be through a licenced waste handler only.

3.13 Personnel Requirements

The staffing requirements for the proposed project during the construction and operational phases are summarised in Table 3.6. Priority will be given, as far as practicable, to the engagement of labour, skilled workers and service providers from the Awka South Local Government Area and the wider Awka community, in order to maximise the socio-economic benefits of the project to the host community and to fulfil the project's local employment commitments.

Table 3.6: Personnel Requirements - Construction and Operational Phases

Role / Category	Est. Numbers	Responsibilities and Notes
CONSTRUCTION PHASE		
Civil and Structural Engineers (resident)	1–2	Structural design oversight, quality assurance for all civil works
Site Manager / Project Manager	1	Overall construction supervision, contractor management, schedule control
Site Environmental Officer (SEO)	1	ESMP implementation, monitoring, regulatory reporting — appointed before mobilisation
Health, Safety and Environment (HSE) Officer	1	Occupational health and safety, accident prevention, toolbox talks
Site Foremen / Supervisors	2–3	Day-to-day supervision of masonry, road and drainage construction teams
Masons / Bricklayers	8–12	Blockwork for fence, drainage channels, gatehouse; concrete works
Carpenters / Formwork Fixers	4–6	Formwork, shuttering, timber structures, site compound facilities
Steel Fixers / Iron Benders	3–5	Reinforcement cutting, bending and fixing for structural concrete elements
Plant / Equipment Operators	4–6	Excavator, roller, grader, tipper truck, asphalt paver operation

Plumbers	2–3	Water supply pipe installation, borehole distribution network
Electricians	2–3	EEDC connection, internal reticulation, site compound electrical works
General Labourers	15–25	Material handling, earthworks assistance, site cleanup and maintenance
Clerical / Administrative Staff	1–2	Site administration, records management, procurement support
OPERATIONAL PHASE		
Estate Manager / Administrator	1	Overall estate management, contractor coordination, regulatory reporting, ESMP compliance
Security Personnel (guards)	2–4 (shift basis)	Gatehouse access control, perimeter security, round-the-clock coverage
Cleaners / Maintenance Workers	2–3	Common area cleaning, road and drain maintenance, landscaping upkeep
Water System Technician (part-time / as needed)	1	Borehole pump maintenance, water quality monitoring, distribution system upkeep

Note: Construction phase numbers are indicative peak-period estimates. Actual numbers will vary by construction stage. All construction workers must hold valid identification and must have completed the site safety induction before commencing work. The SEO appointment is a pre-condition of site mobilisation; the SEO must be in place before any ground disturbance begins.

3.14 Construction Schedule

The overall construction period for all estate infrastructure comprising the perimeter fence, entrance gate and gatehouse, internal access roads, drainage channels and utility installations is estimated at approximately twelve (12) to fourteen (14) months from the date of commencement of site mobilisation, subject to the prior receipt of all required regulatory approvals. This overall duration may extend to eighteen (18) months if regulatory approval lead times, procurement periods or seasonal construction weather events cause programme delays. The construction programme will be executed in the sequential stages described in Section 3.5 and summarised in Table 3.7 below.

Table 3.7: Indicative Construction Programme

S/N	Construction Stage / Activity	Estimated Duration	Cumulative Month
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1	Regulatory approvals completion; contractor procurement and mobilisation; site setting-out; establishment of temporary site facilities (site office, storage yards, sanitary facilities); installation of erosion and silt control measures	1–2 months	Month 1–2
2	Construction of perimeter fence (reinforced blockwork); construction of entrance gate and security gatehouse; installation of site hoarding and access control for construction phase	2–3 months	Month 2–4
3	Internal road earthworks: topsoil stripping, sub-grade formation, compaction; surface drainage channel excavation and construction along all internal road corridors; connection to boundary drainage network	3–4 months	Month 4–7
4	Road base layer placement and compaction; asphalt binder course and wearing course laying for all internal roads; road edging and kerb installation; drainage channel cover placement	2–3 months	Month 7–9
5	EEDC electricity connection application and installation; internal reticulation cabling and conduit laying; borehole / well drilling and casing; pump installation and water supply distribution pipework to plot boundary points	2–3 months	Month 9–11
6	Landscaping, topsoil preparation and tree planting in open spaces and road verges (Sections 79 and 82 of the ANSEMPAL Law, 2024); road marking, directional signage and external finishes	1–2 months	Month 11–13
7	Testing and commissioning of water supply system; pre-commissioning water quality analysis by accredited laboratory (NIS 554:2015); snagging, defects correction, site clearance and final handover to proponent	1 month	Month 13–14

Note: The indicative programme assumes that all regulatory approvals (EIA Certificate from the Federal Ministry of Environment and EIA Preliminary Report from the Anambra State EIA Committee) are in hand before mobilisation commences, in accordance with Section 233 of the Anambra State Environmental Management, Protection and Administration Law, 2024. No ground disturbance or physical construction activity shall commence before all required approvals have been obtained.

3.15 Greenhouse Gas Emissions Considerations

This section presents an estimate and discussion of the Greenhouse Gas (GHG) emissions expected from the proposed Zion Garden Residence project, as required for projects that may emit up to 25,000 tonnes per annum (t/a) of CO₂ equivalent (CO₂e). GHG emissions have been estimated for both the construction phase (one-off emissions spread over the construction period) and the operational phase (recurring annual emissions upon full occupancy).

3.15.1 Basis and Methodology of Estimation

Given the early-stage nature of the project and the absence of a detailed engineering bill of quantities, the GHG emissions presented in this section are indicative estimates based on typical activity data for residential estate infrastructure projects of equivalent scale in Nigeria. The emission factors applied are those published by the Intergovernmental Panel on Climate Change (IPCC) and adopted by the Nigerian GHG inventory methodology for relevant source categories. The principal emission factors used are: diesel combustion 2.68kg CO₂e per litre; Nigeria electricity grid emission factor approximately 0.43kg CO₂e per kWh (sourced from the Energy Commission of Nigeria); and vehicle petrol combustion approximately 2.31kg CO₂e per litre. Carbon sequestration by planted trees is estimated at 0.3 to 0.5t CO₂e per tree per year at maturity, based on IPCC Tier 1 default values for tropical secondary forest species. These estimates carry an inherent uncertainty of ±30–50% and will be refined as detailed design data become available.

3.15.2 Construction Phase GHG Emissions

Construction phase GHG emissions are one-off (non-recurring) and arise primarily from the combustion of diesel fuel in construction plant, equipment and haulage vehicles. Based on the estimated diesel consumption of the construction plant fleet described in Section 3.6 and Table 3.2 (approximately 4,000 to 6,000 litres over the entire construction period, plus a further 800 to 1,200 litres for haulage vehicles), and applying the diesel combustion emission factor of 2.68kg CO₂e/L, total construction phase GHG emissions are estimated at approximately 13 to 19 tonnes of CO₂e in total over the construction period, equivalent to approximately 9 to 15 tonnes CO₂e per year if spread over a 14-month construction period. This is substantially below the 25,000 t/a threshold that would trigger mandatory GHG reporting under applicable federal regulations.

3.15.3 Operational Phase GHG Emissions

Operational phase GHG emissions arise from a range of sources associated with normal residential occupation of the estate. The principal emission sources and indicative annual emission estimates are presented in Table 3.8 below.

Table 3.8: Indicative GHG Emission Estimates - Construction and Operational Phases

Emission Source	Activity / Basis of Estimate	Est. CO ₂ e (t/a)	Notes and Mitigation Lever
CONSTRUCTION PHASE (one-off; spread over 12–18 months)			
Construction plant & equipment (diesel combustion)	~4,000–6,000 L diesel; emission factor 2.68 kgCO ₂ /L	~11–16 t total	Maintain plant in good mechanical order; minimise idling; use fuel-efficient equipment
Tipper trucks and material haulage	~800–1,200 L diesel over construction phase	~2–3 t total	Optimise loads; avoid empty running; source materials locally
Workers' transport and site vehicles	Low; shared transport encouraged	<2 t total	Encourage worker carpooling and public transport
CONSTRUCTION PHASE TOTAL		~15–21 t (total, one-off)	Well below 25,000 t CO ₂ e/a threshold
OPERATIONAL PHASE (annual, upon full occupancy)			
Standby diesel generators - estate management	Est. 400–600 L/a at estate level; 2.68 kgCO ₂ /L	~1–2 t/a	Limit generator use; prefer EEDC grid; install silenced units with acoustic enclosures
Standby generators - individual plot holders	Est. 500–1,000 L/a aggregate for ~20–30 plots; 2.68 kgCO ₂ /L	~1–3 t/a	Encourage solar PV supplementary systems; restrict generator hours per ESMP
Grid electricity consumption (EEDC)	Est. 50–80 MWh/a (common areas + pump); Nigeria grid factor ~0.43 kgCO ₂ /kWh	~22–34 t/a	LED lighting in common areas; energy-efficient borehole pump; smart metering
Domestic cooking (LPG and biomass)	Typical Nigerian household 0.2–0.4 tCO ₂ e/hh/a; 20–30 households	~4–12 t/a	Promote LPG over solid biomass fuels; encourage induction cooking adoption
Vehicle emissions - resident commuting	~20–30 personal vehicles; ~150–250	~30–75 t/a	Tree planting per Section 82, 2024 Law offsets component of transport emissions

	gCO ₂ /km; 10,000 km/a each		
Estate vehicle (maintenance / security)	~1,000–1,500 L/a; 2.68 kgCO ₂ /L	~3–4 t/a	Use fuel-efficient vehicles; regular maintenance
OPERATIONAL PHASE TOTAL (annual)		~61–130 t CO ₂ e/a	Well below 25,000 t CO ₂ e/a threshold — no mandatory GHG reporting triggered
Carbon sequestration credit (tree planting)	~20–30 indigenous trees; ~0.3–0.5 tCO ₂ e/tree/a at maturity	~(6–15) t/a offset	Net annual operational footprint reduced further by estate green infrastructure

Note: Estimates are indicative and based on early-stage design assumptions. Emission factors: diesel 2.68kg CO₂e/L; grid electricity (Nigeria) ~0.43kg CO₂e/kWh; LPG 1.61kg CO₂e/kg; petrol 2.31kg CO₂e/L. Tree carbon sequestration based on IPCC Tier 1 defaults for tropical broadleaved species. Actual emissions will depend on plot holder numbers, occupation density, appliance choices and energy use behaviour. These estimates carry ±30–50% uncertainty.

3.15.4 GHG Threshold Assessment and Mitigation

The total estimated operational phase GHG emissions from the Zion Garden Residence, across all identified emission sources and at full occupancy, are approximately 61 to 130 tonnes of CO₂e per annum. This is orders of magnitude below the 25,000 tonnes of CO₂e per annum threshold that triggers mandatory GHG reporting under applicable federal environmental regulations. The proposed project therefore does not trigger mandatory GHG reporting requirements.

Nevertheless, the proponent is committed to minimising the estate's carbon footprint through the following measures, which are incorporated into the ESMP presented in Chapter Seven:

- i. Maintaining all construction plant and equipment in good mechanical order throughout the construction phase, to ensure combustion efficiency and minimise exhaust emissions, in accordance with Section 287 of the 2024 Law;
- ii. Restricting the operation of standby generators to essential purposes only, and requiring all generators to be fitted with functional acoustic silencers;
- iii. Planting the maximum practicable number of indigenous trees within the estate landscaping programme, in fulfilment of Sections 79 and 82 of the 2024 Law, thereby providing a permanent and growing carbon sequestration benefit;

- iv. Installing energy-efficient LED lighting in all common areas of the estate, including LED security floodlights at the entrance gate, perimeter and internal road junctions of the estate and specifying an energy-efficient pump for the water supply system;
- v. Installing a solar photovoltaic panel system at the estate level to power common-area and security infrastructure, and actively encouraging individual plot holders to consider grid-tied or standalone solar photovoltaic systems, particularly for hot water heating and supplementary electricity generation.
- vi. Promoting the use of LPG for cooking in preference to solid biomass fuels, which generate both higher GHG emissions (from incomplete combustion) and significant particulate air pollution.

3.16 Summary

The proposed Zion Garden Residence at Plot 36, Agu Awka, Old Enugu/Onitsha Road, Awka South Local Government Area, Anambra State, is a residential plot estate development promoted by EL Ehyeh Properties Limited (RC: 1499498), represented by its Chief Executive Officer, Mr. Ndefo Chinonso Hillary. The estate covers a total land area of 11,759.44 square metres (approximately 1.18 hectares) and will provide demarcated and serviced residential plots within a structured, secure and environmentally managed estate environment.

The project will be developed over four phases site preparation, construction, operation and eventual decommissioning. The construction phase, estimated at twelve to fourteen months from mobilisation, will deliver the following permanent estate infrastructure: a reinforced sandcrete blockwork perimeter security fence; a controlled entrance gate and manned security gatehouse; an internal asphalt road network; surface concrete-lined drainage channels; an EEDC electricity connection with internal reticulation to plots; a centralised borehole water supply system with distribution pipework; and landscaped open spaces planted with indigenous trees and vegetation in fulfilment of the obligations of Sections 79, 80 and 82 of the Anambra State Environmental Management, Protection and Administration Law, 2024.

Key raw materials include ordinary Portland cement, laterite and crushed stone aggregate, sandcrete blocks, reinforcing steel, asphalt and diesel fuel. Principal construction plant includes excavators, road rollers, motor graders, tipper trucks, concrete mixers and an asphalt paver. Waste streams generated during construction including excavated spoil, concrete debris,

packaging waste and sanitary waste will be managed in strict compliance with Sections 136, 137 and 145 of the 2024 Law. During operation, domestic solid waste will be collected by an ASWAMA-licensed Private Waste Collector, domestic wastewater will be managed through individual soak-away pit systems and a wastewater clearance will be obtained from the Wastewater Management Office in compliance with Section 216(1) of the Law.

Comprehensive Health, Safety and Environment measures will be implemented throughout the construction phase, including PPE provision, a resident HSE Officer and SEO, daily dust and noise management, weekly toolbox talks and a rigorous incident reporting system. During operation, the estate management will maintain ongoing HSE provisions covering security, electrical safety, water quality monitoring, drainage maintenance and emergency preparedness.

GHG emissions from the project estimated at approximately 13 to 19 tonnes CO₂e (total, construction phase) and approximately 61 to 130 tonnes CO₂e per annum (operational phase) are orders of magnitude below the 25,000 t/a mandatory reporting threshold. The project will be implemented over its entire life cycle in full conformity with the requirements of the EIA Act, Cap E12, the Environmental Impact Assessment Procedures and Charges Regulations, 2021, and the Anambra State Environmental Management, Protection and Administration Law, 2024, and in accordance with the Environmental and Social Management Plan presented in Chapter Seven of this Report.

CHAPTER FOUR

DESCRIPTION OF THE PROJECT ENVIRONMENT

4.1 Area of Influence

The area of influence for the proposed Zion Garden Residence encompasses the project site itself, covering a total land area of 11,759.44 square metres, together with its immediate environs within which environmental and social effects are reasonably likely to be experienced during the construction and operational phases of the project. This area extends to include adjacent residential and commercial developments, the road corridor fronting the site along the Old Enugu/Onitsha Road, public utility infrastructure in the vicinity, and the principal sensitive receptors identified within the broader neighbourhood.

In determining the area of influence, consideration was given to the spatial extent of likely air quality impacts, noise propagation, traffic disturbance and surface drainage interactions, all of which were assessed as being primarily localised within approximately 200 to 500 metres of the site boundary in the directions most relevant to prevailing wind patterns and road connectivity. The assessment also considers the strategic urban context of the site, given its location within a corridor that is characterised by a concentration of significant institutional and commercial activities, including the International Convention Centre (ICC), Awka, and the Rotic Aluminium Extrusion facility.

Primary data underpinning this assessment were obtained through field visits, site inspections, GPS co-ordinate recording, noise level measurements and the collection and laboratory analysis of soil, water and air quality samples. Secondary data were sourced from relevant government publications, planning documents, published literature on the environmental and climatological characteristics of the Awka area, and applicable national environmental standards and guidelines. The assessment covers both biophysical components including air quality, noise, topography, soils, water resources, flora and fauna and socio-economic components, including land use, infrastructure, livelihoods and community health.

4.2 Geography and Physiography of the Project Area

The project site is situated within the urban core of Awka, the capital city of Anambra State, in the south-eastern geo-political zone of Nigeria. Awka lies at approximately 6°12' North latitude and 7°04' East longitude. Anambra State is bounded to the north by Kogi State, to the west by Delta State, to the south by Imo and Rivers States and to the east by Enugu State. Within this regional context, Awka occupies the central zone of the State along the Enugu-Onitsha corridor, one of the most economically significant transport and commercial arteries in south-eastern Nigeria.

The project site, confirmed by GPS field readings to be located at co-ordinates ranging between 6°13'50" N and 6°13'59" N latitude and between 7°6'44" E and 7°6'50" E longitude, falls within the Awka South Local Government Area. The recorded elevations at the five reference points taken during field investigations ranged between 160 feet (approximately 49 metres) at the midpoint of the extreme back boundary fence and 190 feet (approximately 58 metres) at three of the four soil sampling points, indicating a modest variation in surface relief across the site. This variation is consistent with the gently undulating topographic character of the Awka urban area and suggests the possibility of very gentle internal gradients that will inform drainage design within the estate.

Geomorphologically, the Awka area forms part of the Awka-Orlu Uplands, a dissected plateau that constitutes one of the principal physiographic units of south-eastern Nigeria. The uplands are composed predominantly of Eocene to Oligocene sedimentary formations, including sandstone, shale and sandy clays, which have been subjected to prolonged weathering and erosion processes. In Awka specifically, the dominant surface lithology consists of deeply weathered sandy and clayey materials derived from these formations, giving rise to the predominantly sandy loam to clay loam soils encountered at the project site. This geological background has direct implications for the susceptibility of exposed soils to erosion, the bearing capacity of foundations and the behaviour of groundwater within the project area.

The Awka area is also notable in the context of south-eastern Nigeria for its susceptibility to gully erosion, a process that has affected numerous sites across Anambra State and which is recognised as a significant environmental challenge in the region. The Anambra State Environmental Management, Protection and Administration Law, 2024, specifically establishes the Anambra State Erosion, Watershed and Climate Change Agency

(ANSEWCCA) under Part 2 of that Law, underscoring the priority that the State Government accords to erosion management. Whilst the project site itself does not currently exhibit evidence of active gully erosion, the susceptibility of sandy and sandy loam soils in the area to erosion by surface runoff makes effective stormwater management and soil protection during the construction phase a matter of considerable importance.

4.3 Climate and Meteorology

The project area lies within the humid tropical climatic zone of south-eastern Nigeria, characterised by warm to hot temperatures throughout the year and a clearly defined bimodal rainfall pattern. This climatic type is broadly classified under the Köppen-Geiger classification as Aw (tropical savanna climate), characterised by a pronounced dry season and a wet season with high rainfall.

4.3.1 Temperature

Mean annual temperatures in the Awka area generally range between 26°C and 30°C. The hottest period of the year occurs between February and April, immediately preceding the onset of the major rainy season, when maximum daytime temperatures may exceed 33°C. The coolest period falls between July and September, when increased cloud cover and sustained rainfall moderate daytime temperatures. Diurnal temperature ranges are moderate, typically between 8°C and 12°C.

4.3.2 Rainfall

Rainfall in the Awka area follows a bimodal pattern, with a major rainy season running from approximately March to July and a minor rainy season from September to November, separated by a short dry spell known as the August break. The long dry season extends from November to February and is associated with the dry, desiccating Harmattan wind from the north-east. Mean annual rainfall in the Awka area ranges between 1,800 mm and 2,200 mm, with the heaviest monthly totals recorded in June and July. Individual rainfall events can be intense, with high-intensity storms generating substantial surface runoff that poses a significant risk of erosion and flooding if drainage systems are inadequate.

4.3.3 Humidity and Evapotranspiration

Relative humidity in the project area is generally high throughout the year, often exceeding 70% and frequently reaching 85% or more during the peak rainy season. During the dry season, particularly during the Harmattan period from December to January, relative humidity may fall to 40–50% as the dry north-easterly winds reduce atmospheric moisture. Potential evapotranspiration is moderate, generally in the range of 1,200 to 1,500 mm per annum, which is lower than annual rainfall, indicating that the water balance in the area is positive and that groundwater recharge is facilitated.

4.3.4 Wind

Prevailing winds in the project area are south-westerly during the wet season, bringing warm, moist maritime air from the Atlantic Ocean across the Gulf of Guinea. During the dry season, winds shift to north-easterly and are associated with the Harmattan, a dry, dusty wind originating in the Sahara that carries fine particulate matter and reduces visibility and air quality. Wind speeds are generally moderate and are not expected to give rise to exceptional dust transport from construction activities, though standard dust suppression measures will nonetheless be required during the construction phase, particularly during the Harmattan period.

4.3.5 Climate Change Considerations

The Awka area is increasingly susceptible to the effects of climate variability and climate change. Observed trends include more intense and erratic rainfall events, longer and more severe dry spells and rising mean temperatures. These trends are consistent with projections for the West African sub-region under multiple climate change scenarios. In the context of the proposed project, the most significant climate-related risks include increased surface runoff and potential flooding during intense rainfall events, and the exacerbation of soil erosion during both construction and operation. The Anambra State Environmental Management, Protection and Administration Law, 2024, through the establishment of ANSEWCCA under Part 2, recognises the need for systematic climate change adaptation across the State. The project design and ESMP have been developed with due cognisance of these climate risks, incorporating adequate drainage provision, erosion control measures and landscape management requirements.

4.4 Topography and Soils

4.4.1 Topography

The project site occupies gently undulating terrain that is typical of the urban sections of the Awka-Orlu Uplands. As established from GPS elevation readings taken at the five reference points during field investigations, the site displays a modest variation in surface level, with recorded elevations ranging from approximately 160 feet (49 metres) at the midpoint of the back boundary fence (Reference Point MP-BF, 6°13'52" N, 7°6'48" E) to approximately 190 feet (58 metres) at the three higher-lying soil sampling points (SS1, SS3 and SS4). The central and southern portions of the site thus appear to lie at a marginally lower elevation than the northern and eastern sections, suggesting a gentle natural gradient from north to south-east. This topographic configuration will inform the detailed drainage design for the estate and is consistent with the general pattern of gentle surface drainage towards the Old Enugu/Onitsha Road corridor in the south.

The relatively flat to gently sloping terrain makes the site fundamentally suitable for residential estate development with minimal requirement for major cut-and-fill earthworks operations. However, care will be required during excavation for drainage channels and utility trenches to manage any instability in the sandy loam soils.

4.4.2 Soils Baseline Characteristics

Soil samples were collected from four points distributed across the project site, designated SS1 through SS4, at the following confirmed GPS co-ordinates.

Table 4.1: Showing the soil sample points and GPS coordinate

Sample Point	Latitude (N)	Longitude (E)	Location Description
SS1	6°13'53" N	7°6'50" E	South-eastern zone of site
SS2	6°13'50" N	7°6'47" E	South-western zone of site
SS3	6°13'59" N	7°6'47" E	Northern zone of site
SS4	6°13'57" N	7°6'44" E	North-western zone of site

The results of laboratory analysis of the soil samples, covering seventeen physicochemical parameters, are presented in Table 4.2 below. These data constitute the soil quality baseline for the project and provide the reference against which any post-construction changes in soil

quality may be assessed in accordance with the environmental monitoring requirements of the Anambra State Environmental Management, Protection and Administration Law, 2024.

Table 4.2: Physicochemical Parameters of Soil Samples from Project Site (SS1–SS4)

S/N	Parameter	Unit	SS1	SS2	SS3	SS4	WHO/ NESREA Limit	Remarks
1	Sodium	mg/kg	80.85	79.7	76.8	71.87	No standard	N/A
2	Potassium	mg/kg	93.47	92.42	91.34	88.84	No standard	N/A
3	Calcium	mg/kg	66.64	65.02	63.73	60.94	No standard	N/A
4	Magnesium	mg/kg	47.02	45.65	46.57	45.87	No standard	N/A
5	Chloride	mg/kg	8.79	9.23	9.59	10.56	No standard	N/A
6	Nitrate	mg/kg	0.67	0.68	0.71	0.74	< 50	Satisfactory
7	Sulphate	mg/kg	10.63	11	11.25	11.55	< 250	Satisfactory
8	Aluminium	mg/kg	12.78	12.98	13.15	13.23	No standard	N/A
9	Iron	mg/kg	0.49	0.5	0.49	0.5	< 50	Satisfactory
10	Lead	mg/kg	0.03	0.02	0.02	0.01	< 85	Satisfactory
11	Copper	mg/kg	0.2	0.17	0.14	0.14	< 36	Satisfactory
12	pH	-	7.1	6.2	5.45	5.25	6.5 – 8.5	Satisfactory
13	Temperature	°C	27.4	27.4	27.4	27.4	No standard	N/A
14	Loss on Ignition	%	11.45	11.05	11.45	10.8	No standard	N/A
15	Phosphorous	mg/kg	4.73	5.08	5.52	6.03	No standard	N/A
16	Oil/Grease	mg/kg	0.45	0	0	0	< 50	Satisfactory
17	Moisture	%	17.94	16.34	19.05	18.05	No standard	N/A

4.4.3 Interpretation of Soil Analysis Results

The soil pH values across the four sampling points reveal a notable gradient from near-neutral in the south-eastern zone (SS1: pH 7.10) to moderately acidic in the north-western zone (SS4: pH 5.25), with SS2 (pH 6.20) and SS3 (pH 5.45) recording intermediate values. This pattern suggests that the south-eastern portion of the site has been subject to greater anthropogenic influence, including possible disposal of alkaline construction materials, whilst the more northerly portions retain the slightly to moderately acidic character that is typical of lateritic soils in the Awka-Orlu Uplands. The moderately acidic conditions at SS3 and SS4 are consistent with the extensive natural leaching of base cations from the soil profile that characterises humid tropical environments.

Major nutrient cations sodium, potassium, calcium and magnesium show consistently elevated values at SS1 and slightly declining values towards SS4, a pattern that may reflect differences in organic matter content or the degree of anthropogenic soil enrichment across the site. Aluminium values are relatively low and uniform across all sampling points, indicating that aluminium toxicity is unlikely to be a concern for vegetation establishment during the landscaping phase. Heavy metal concentrations, including lead and copper, are low and well below internationally recognised threshold values for residential land use, confirming that the soils do not present any significant contamination risk to future estate residents. The trace detection of oil and grease at SS1 (0.45 mg/kg), and absence at the other three points, warrants monitoring during construction to prevent any escalation that might indicate fuel or lubricant spillage from construction plant.

Moisture contents ranging between 16.34% and 19.05% are consistent with the seasonal conditions at the time of sampling and suggest adequate but not excessive soil moisture. Loss on ignition values in the range of 10.80% to 11.45% indicate a moderate organic matter content that is broadly typical for partially developed urban soils in the region. These soil characteristics collectively indicate that the site soils are suitable for residential development provided that adequate foundation design and drainage measures are implemented.

4.5 Water Resources

4.5.1 Surface Water

There are no perennial surface water bodies rivers, streams or ponds located within or immediately adjacent to the project site. Seasonal drainage is conveyed through the road drainage network along the Old Enugu/Onitsha Road corridor and through informal surface flow channels that develop in response to rainfall events. The absence of permanent surface water bodies within the immediate project footprint significantly reduces the risk of direct contamination of sensitive aquatic ecosystems during construction.

However, it is noted that the broader Awka urban area has been subject to progressive drainage degradation as urbanisation has intensified. The Anambra State Environmental Management, Protection and Administration Law, 2024, specifically establishes the Anambra State Clear Drainage and Inland Flood Management Agency under Part 3 of that Law, which is mandated under Section 37 to manage drainage infrastructure and prevent flooding across the State. The proponent's obligation to design and maintain adequate internal drainage within the estate, as required by both the 2024 Law and the Environmental Impact Assessment Procedures and Charges Regulations, 2021, is accordingly treated as a significant environmental commitment in this Report.

4.5.2 Groundwater Baseline Water Quality

Groundwater constitutes the primary source of domestic water in the project area and the immediate environs, accessed through wells and boreholes. A water quality analysis was conducted on a sample obtained from an enclosed (covered) well located within the project site. The results are presented in Table 4.3 below.

Table 4.3: Physicochemical and Biological Parameters of Groundwater from Site Well

S/N	Parameter	Unit	Result	WHO/SON Guideline	Remarks
1	pH	—	7.1	6.5 – 8.5	Satisfactory
2	Temperature	°C	27.5	≤ 25 (ambient)	Unsatisfactory
3	Total Dissolved Solids (TDS)	mg/L	106.3	≤ 500	Satisfactory
4	Total Suspended Solids (TSS)	mg/L	209.5	≤ 30	Unsatisfactory
5	Nitrate	mg/L	0.09	≤ 10 (as NO ₃ ⁻ -N)	Satisfactory
6	Sulphate	mg/L	161.8	≤ 250	Satisfactory
7	Sodium	mg/L	77.04	≤ 200	Satisfactory
8	Potassium	mg/L	89.15	No guideline	N/A
9	Calcium	mg/L	16.8	≤ 75	Satisfactory
10	Magnesium	mg/L	8.2	≤ 50	Satisfactory

11	Chloride	mg/L	124.12	≤ 250	Satisfactory
12	BOD ₅	mg/L	8.99	≤ 3	Unsatisfactory
13	COD	mg/L	7.9	No guideline	N/A
14	Iron	mg/L	0.13	≤ 0.3	Satisfactory
15	Copper	mg/L	0.1	≤ 1.0	Satisfactory
16	Mercury	mg/L	Nil	≤ 0.001	Satisfactory
17	Lead	mg/L	0.004	≤ 0.01	Satisfactory
18	Phenols	mg/L	Nil	≤ 0.001	Satisfactory
19	Electrical Conductivity	μS/cm	800	≤ 1000	Satisfactory
20	Total Solids	mg/L	315.8	≤ 1000	Satisfactory
21	E. coli	MPN/100mL	Nil	0 (absent)	Satisfactory
22	Total Coliform	MPN/100mL	140	0 (absent)	Unsatisfactory
23	Odour	Qualitative	Objectionable	Unobjectionable	Unsatisfactory
24	Taste	Qualitative	Objectionable	Unobjectionable	Unsatisfactory
25	Turbidity	Qualitative	Objectionable	≤ 5 NTU	Unsatisfactory
26	Arsenic	mg/L	Nil	≤ 0.01	Satisfactory
27	Total Hardness	mg/L	67.94	≤ 150	Satisfactory

Note: Parameters highlighted in red/bold indicate exceedances of WHO/SO drinking water guideline values or significant quality concerns. Source: Laboratory analysis conducted by Stellovate Limited, January 2026.

4.5.3 Interpretation of Water Quality Data

The baseline water quality data reveal that the groundwater from the site well is of acceptable chemical quality for most parameters. The pH of 7.1 indicates near-neutral conditions that are suitable for general domestic use. Total Dissolved Solids (TDS) at 106.3 mg/L are well within the WHO guideline of 500 mg/L, and major ionic constituents sodium, calcium, magnesium, chloride and sulphate are all below their respective guideline thresholds. Heavy metals, including iron, copper, lead, mercury and arsenic, are either absent or present at concentrations well below guideline values, indicating a low level of heavy metal contamination. Electrical conductivity at 800 μS/cm is acceptable.

However, four parameters warrant specific attention. First, Total Suspended Solids (TSS) at 209.5 mg/L significantly exceeds the guideline threshold of 30 mg/L, contributing to the objectionable turbidity that was observed and recorded in the qualitative assessment. Second, the Biochemical Oxygen Demand (BOD₅) result of 8.99 mg/L exceeds the guideline value of 3 mg/L, indicating a moderate level of biodegradable organic matter in the water that could support microbial activity if the water were used without treatment. Third, the Total Coliform

count of 140 MPN/100 mL, while *E. coli* was found to be absent, nevertheless indicates faecal or environmental microbial contamination of the well water that renders it unsuitable for consumption without treatment. Fourth, the objectionable odour, taste and turbidity recorded confirm that the well water, in its raw state, is not fit for direct human consumption.

These findings underscore the critical importance of ensuring that the estate's water supply is either sourced from or adequately treated to meet potable water standards before distribution to residents. The proponent has indicated that water supply will be provided through a centralised borehole with distribution to individual plots; it is imperative that the borehole water be subjected to appropriate water quality testing and treatment before commissioning, in accordance with the applicable provisions of the Anambra State Environmental Management, Protection and Administration Law, 2024, and the applicable national water quality standards.

4.6 Ambient Air Quality

Ambient air quality at the project site was assessed through direct field measurements taken at three separate points within the site during January 2026. The three measurement points were positioned to capture spatial variation in air quality: Point 1 was located close to the main entrance gate, adjacent to the Old Enugu/Onitsha Road, and therefore most exposed to road traffic emissions; Point 2 was at the central area of the site; and Point 3 was at the extreme interior of the site, furthest from road traffic influence. The results are presented in Table 4.4 below.

Table 4.4: Ambient Air Quality Measurements at Three Points within the Project Site

Parameter	Unit	Point 1 (Entrance)	Point 2 (Centre)	Point 3 (Interior)	WHO /NESREA Guideline	Remarks
Formaldehyde (HCHO)	mg/m ³	0.015	0.012	0.05	0.1	Satisfactory
Total VOC (TVOC)	mg/m ³	0.047	0.039	0.14	0.6	Satisfactory
PM _{2.5}	µg/m ³	13	12	11	25 (24-hr)	Satisfactory
PM ₁₀	µg/m ³	18	18	15	50 (24-hr)	Satisfactory
Carbon Monoxide (CO)	ppm	0	0	0	9 (8-hr)	Satisfactory
Carbon Dioxide (CO ₂)	ppm	569	2,444	355	1,000 (indoor ref)	Unsatisfactory at Point 2

Source: Field measurements by Stellovate Limited, January 2026. WHO = World Health Organisation. NESREA = National Environmental Standards and Regulations Enforcement Agency.

The ambient air quality data indicate generally good air quality conditions at the project site at the time of sampling. Particulate matter concentrations both PM_{2.5} and PM₁₀ are well within the WHO 24-hour guideline values of 25 µg/m³ and 50 µg/m³ respectively across all three measurement points, confirming that the baseline ambient air quality is not compromised by significant particulate pollution. Carbon monoxide was undetected at all three points, consistent with the absence of heavy industrial sources in the immediate vicinity. Formaldehyde and Total VOC levels are also well within guideline values.

The CO₂ reading of 2,444 ppm at Point 2 (the central area of the site) is notably higher than at Points 1 and 3, and exceeds the commonly cited indoor reference threshold of 1,000 ppm. This elevated reading likely reflects local conditions at the time of measurement, such as the proximity of the measurement device to a localised source of CO₂ or restricted air circulation in a partially enclosed area within the site, rather than indicating a generalised ambient CO₂ problem. The readings at Point 1 (569 ppm) and Point 3 (355 ppm) are within the range typically expected for outdoor urban air. It is noted that CO₂ is not a criteria air pollutant from a public health perspective at these concentrations; the guideline of 1,000 ppm applies to indoor environments as an indicator of adequate ventilation. No regulatory exceedances of significance to outdoor ambient air quality are indicated by the air quality data.

Construction activities will inevitably cause temporary and localised increases in particulate matter concentrations, primarily from the excavation of soils, demolition of any existing structures on the site, mixing of cement and other fine materials, and the movement of vehicles on unpaved surfaces. The impact of these activities on air quality is assessed in Chapter Five. In accordance with Section 255(1)(d) of the Anambra State Environmental Management, Protection and Administration Law, 2024, dust, steam, smell or other effluvia arising from construction activities that are prejudicial to health or constitute a nuisance are classified as statutory nuisances, and the proponent is accordingly under a legal obligation to implement all practicable measures to prevent construction dust from causing such nuisance to neighbouring properties.

4.7 Noise Environment

The baseline noise environment of the project area is influenced primarily by vehicular traffic along the Old Enugu/Onitsha Road, which borders the project site along its southern frontage, and by the general ambient noise from surrounding commercial and institutional activities in the vicinity. The noise environment of the area can be classified as mixed residential-commercial in character, with moderate noise levels during daytime business and traffic hours that typically reduce during the late evening and early morning periods.

Table 4.5: Noise Level Measurements at Three Points within the Project Site

Sampling Round	Point	Location Description	L_{Aeq} (dB)	Max Level (dB)	L_{Cpeak} (dB)	WHO/NE SREA Limit (Daytime) dB	Remarks
Round 1 (Morning)	Point 1	Main entrance - closest to the road	60.7	82.4	114.5	55	Unsatisfactory
	Point 2	Centre of the site	53.2	74.7	102.2	55	Satisfactory
	Point 3	Extreme end	44.7	74.9	101.8	55	Satisfactory
Round 2 (Afternoon)	Point 1	Main entrance - closest to the road	62.3	85.1	118.2	55	Unsatisfactory
	Point 2	Centre of the site	55.8	76.2	104.5	55	Unsatisfactory
	Point 3	Extreme end	47.4	73.5	100.3	55	Satisfactory
Round 3 (Evening)	Point 1	Main entrance – closest to the road	58.6	79.8	110.7	55	Unsatisfactory
	Point 2	Centre of the site	52.7	72.4	99.8	55	Satisfactory
	Point 3	Extreme end	43.9	71.2	98.5	55	Satisfactory

Field noise measurements were taken in three rounds, and at three points within the project site during the January 2026 site visit. As described in the baseline data documentation, Point 1 was located near the main entrance (closest to the road), Point 2 was at the centre of the site, and Point 3 was at the extreme interior of the site. The proximity of Point 1 in each case to the Old Enugu/Onitsha Road means that traffic noise is the dominant sound source at that location. The interior points (Points 2 and 3) recorded progressively lower noise levels, as the site boundary and any existing structures provided partial acoustic attenuation.

The noise environment is consistent with the classification of the project area as a mixed residential-commercial zone. Applicable noise standards include the National Environmental (Noise Standards and Control) Regulations, 2009, made pursuant to the NESREA Act, which prescribe permissible noise levels for different land use categories, and Section 282 of the Anambra State Environmental Management, Protection and Administration Law, 2024, which prohibits noise in private and public places that constitutes a nuisance. Section 255(1)(g) of that Law further classifies noise emitted from premises that is prejudicial to health or constitutes a nuisance as a statutory nuisance subject to enforcement action.

4.8 Flora and Fauna

The project site and its immediate surroundings have been substantially modified by human activities associated with the ongoing urbanisation and development of the Awka South area. Vegetation cover on and around the site is dominated by disturbed urban plant communities, comprising grasses, herbaceous weeds, scattered ornamental shrubs and isolated trees. The vegetation present is generally tolerant of human disturbance and does not include any species that are known to be rare, threatened, endangered or otherwise protected under the provisions of the Convention on International Trade in Endangered Species (CITES) or applicable Nigerian environmental legislation.

Part 5 of the Anambra State Environmental Management, Protection and Administration Law, 2024, establishes the regulatory framework for forestry and tree protection in the State, including provisions under Section 96 for the designation of protected tree species and under Section 82 for mandatory tree planting. Field observations at the site confirmed that no protected tree species are present within the project footprint. However, the proponent and

contractor are advised to retain any mature trees that may be found on the site boundaries where practicable, in accordance with the spirit of these provisions.

Faunal presence within the project area is limited to small urban-adapted species characteristic of heavily disturbed urban environments, including a variety of bird species (including weaver birds, sunbirds and kites), small rodents, lizards and a range of urban invertebrates. No significant wildlife habitat exists within the project footprint. The absence of sensitive ecological habitats, protected species or significant biodiversity values within the project area means that ecological impacts are not expected to be of high significance, provided that landscaping commitments made in the ESMP are fulfilled and that the estate's open and planted areas are managed in a manner that creates functional urban green infrastructure.

4.9 Socio-Economic Environment

Baseline data on the socio-economic condition of the host community was gathered through a desk review of published sources, a structured questionnaire survey within the immediate project neighbourhood, and a scheduled community consultation meeting. The questionnaire targeted residents, business operators and traders along the Old Enugu/Onitsha Road corridor, selected on a purposive basis given the limited size of this immediate catchment relative to the wider LGA. The scheduled consultation meeting recorded no attendance from the host community, as noted in the consultation record for the project. Questionnaire responses were counted by hand and expressed as percentages in Table 4.6. A blank copy of the questionnaire is attached as Appendix 5. No photographs of the consultation meeting or questionnaire exercise are included: the meeting had no attendance, and the few respondents who completed the questionnaire did not consent to being photographed.

Table 4.6: Participants of

Question	Response Option	No. of Respondents	Percentage
Sex	Male	7	87.5
	Female	2	12.5
Awareness of the project	Yes	8	100
	No	0	0

4.9.1 Population and Settlement Pattern

Awka South Local Government Area is one of the most densely populated and rapidly growing local government areas in Anambra State, driven by its status as the host area for the State capital and by the concentration of government, commercial and educational activities within

the Awka urban area. The population of the area includes a broad mix of civil servants, professionals, students, traders and entrepreneurs who have been drawn to the city by employment and economic opportunity. The neighbourhood in which the project site is located is undergoing rapid residential and commercial transformation, as evidenced by the numerous ongoing construction projects observed during field visits.

4.9.2 Economic Activities

The principal economic activities in the project area include government administration, retail and wholesale trade, professional and commercial services, and construction. The project corridor along the Old Enugu/Onitsha Road supports a significant concentration of commercial activities, ranging from formal businesses to roadside traders and service providers. The presence of the International Convention Centre (ICC), Awka, and other major institutional facilities in the vicinity generates substantial economic activity and supports a range of ancillary services.

4.9.3 Social Infrastructure and Community Assets

Infrastructure in the project area is relatively well-developed by the standards of most Nigerian urban neighbourhoods, reflecting the area's status as a priority corridor for government investment. Road infrastructure is provided by the Old Enugu/Onitsha Road, which is a major paved arterial route. Electricity supply is available from the Enugu Electricity Distribution Company (EEDC) grid, though supply is intermittent, as is the case across most of Nigeria. Telecommunications infrastructure, including mobile networks and broadband internet, is available in the area. Water supply is primarily from private boreholes and wells, as public water supply from the Anambra State Water Corporation is not reliably available in the area.

Eke Awka stands out as the major market serving the town and its neighbours, and it anchors a lot of daily economic and social life in the area. The International Convention Centre already flagged as a sensitive receptor also doubles as a social and civic asset, hosting conferences, government functions and public events. Beyond these, the area has churches, a scatter of community halls and civic centres tied to town unions, and recreational spots that have grown up around Awka's expanding hospitality sector. These assets matter because they draw crowds and traffic at predictable times, market days, church services, convention centre events, and construction schedules should ideally work around them.

4.9.4 Land Use

Land use within the project environment is predominantly urban and is characterised by a dynamic mix of residential estates, commercial premises, institutional facilities and undeveloped or partially developed plots that are progressively being absorbed into more intensive uses. The prevailing trend in recent years has been a clear transition from low-density residential and agricultural uses to higher-density residential and mixed commercial-residential development. The proposed project is entirely consistent with this evolving land-use pattern and aligns with the applicable planning policies and development objectives for the corridor.

Land in Awka South is held mostly under customary tenure, passed down through families and villages, with formal titling often lagging behind actual occupation and use. This gap between custom and paperwork has become a real source of tension in the area, with reported disputes over land ownership between neighbouring communities such as Awka and Nibo, and a pattern of so called land grabbing linked to violent crime including kidnapping and assault. For a project like Zion GRA, this points to the importance of a clean chain of title and clear engagement with the customary landholding family or village, since land disputes in this part of Anambra have shown a tendency to escalate quickly.

4.9.5 Public Health and Health Facilities

Awka South carries a mixed bag of health infrastructure. At the top end sits the Chukwuemeka Odumegwu Ojukwu University Teaching Hospital (COOUTH) at Amaku, which functions as the main tertiary referral centre for the state. Below that are several mission and private secondary hospitals scattered around Awka town and Amawbia, including Regina Caeli, Prime Specialist Hospital, Trinity, Rock Foundation and Christ the King, plus the Nnamdi Azikiwe University Medical Centre. At the base level are numerous small Primary Health Centres and health posts serving individual wards such as Umuokpu, Okpuno and Nibo. What this tells us for the EIA is that formal health coverage exists in reasonable spread, but a lot of it is private and fee based, meaning that ordinary residents near the project site may still lean on self medication or informal care first. Any construction dust, noise or traffic risk assessment should treat these facilities, especially COOUTH and the smaller PHCs close to the corridor, as receptors whose patients and staff could be disturbed.

4.9.6 Community Lifestyle and Values

The area sits at the heart of what is often called the Igbo heartland, and Awka itself carries a long identity as a centre for blacksmiths, bronze and wood craftsmen going back to the Nri civilisation. Traditional structures such as Ozo title taking, the Igwe stool, and village unions still carry real social weight even though Christianity has replaced most of the old religious practice. Family and kinship ties remain strong, and communal decision making through town unions and age grade groups is still how a lot of local business gets done, including issues around land and development projects. For a project like Zion GRA, this means engagement with village heads, town unions and Igwes is not a formality, it is often the actual channel through which a project earns social acceptance.

4.9.7 Transportation and Traffic Patterns

The Old Enugu/Onitsha Road that the project sits along is one of the busiest corridors in the state, carrying traffic between two major cities plus a heavy volume of commercial and university related movement from Nnamdi Azikiwe University nearby. Reports over the years describe this corridor as prone to gridlock, partly from poor road surface in sections, partly from the sheer volume of private cars, commercial buses, and truck traffic. There is also a documented pattern of congestion building up around junctions such as Eke-Nibo, driven by market days, school runs and events at the ICC. This means construction traffic is entering a corridor that already struggles with capacity, so the timing and routing of heavy vehicles matters more here than it might be elsewhere.

4.9.8 Education Facilities and Literacy Levels

Awka South hosts Nnamdi Azikiwe University, a federal university with a large student population spread across several faculties, along with Paul University and a scatter of primary and secondary schools serving the neighbourhood. Anambra State generally records one of the higher literacy rates among Nigerian states, and the presence of a major university in the immediate area reinforces a resident population that includes students, lecturers and support staff. This matters for the report because a chunk of the local population is transient, students and staff who may only be in the area during term time, and their movement patterns around the university add another layer to the daily traffic and activity around the corridor.

4.9.9 Housing Conditions and Quality of Life

The neighbourhood is described elsewhere in the report as undergoing fast residential and commercial change, and this fits the wider picture of Awka South, where the GRA and surrounding wards are seeing a shift from lower density housing to denser residential and mixed use development. Housing quality varies quite a bit within short distances, newer estates with better finishing sit close to older, more basic structures. Rental demand tends to be pushed up by the steady inflow of civil servants, traders and students drawn to Awka's role as state capital, which in turn affects affordability for long term residents. This context is useful for judging how a new residential development like Zion GRA fits into or adds pressure on the existing housing market.

4.9.10 Water Supply and Sanitation for Residents

Public piped water from the Anambra State Water Corporation does not reliably reach most of the project area, so households depend heavily on private boreholes and wells, a pattern already noted in the baseline chapter regarding the project site itself. Sanitation across Awka South, as in most of urban Anambra, leans on septic tanks and soakaways rather than a central sewage network, and solid waste management is a recognised weak point across the state's fast growing towns. This means any project that demands water or waste disposal is landing on a system that is already informal and under some strain, rather than a fully serviced municipal grid.

4.9.11 Employment, Income and Livelihood Sources

The local economy runs mainly on government administration, since Awka is the state capital, alongside retail and wholesale trade, professional services and construction, as already captured under economic activities. Beyond that headline picture, a good share of residents earn a living informally, roadside trading, artisan work, transport services and small scale contracting tied to the steady stream of building projects in the area. Income levels vary widely between salaried civil servants and professionals on one end and traders and labourers on the other, and this gap shapes who benefits most directly from construction jobs a project like this would generate.

4.9.12 Social Infrastructure and Community Assets

Eke Awka stands out as the major market serving the town and its neighbours, and it anchors a lot of daily economic and social life in the area. The International Convention Centre already flagged as a sensitive receptor also doubles as a social and civic asset, hosting conferences,

government functions and public events. Beyond these, the area has churches, a scatter of community halls and civic centres tied to town unions, and recreational spots that have grown up around Awka's expanding hospitality sector. These assets matter because they draw crowds and traffic at predictable times, market days, church services, convention centre events, and construction schedules should ideally work around them.

4.9.13 Cultural Heritage and Sites of Significance

The wider Awka area carries deep historical weight as part of the ancient Nri civilisation, known for early bronze work and metal craft, and the town itself still marks this heritage through festivals such as Imo Awka, alongside surviving traditional institutions like the Ozo title society. While the immediate project site is described as heavily disturbed urban land with low ecological value, the surrounding area does hold sites of cultural memory, shrines, ancestral village land, and burial grounds tied to specific families with various practices and culture.

4.9.14 Vulnerable and Marginalised Groups

Within any urban Nigerian neighbourhood undergoing rapid change, certain groups tend to carry more of the burden from construction disruption, women who trade along the roadside, elderly residents with fixed or limited income, children walking to nearby schools, and low income tenants who have less power to negotiate around noise, dust or displacement. Reports of women being harassed or assaulted amid land disputes elsewhere in Anambra also point to a broader pattern worth flagging, that conflict linked to land and development can fall disproportionately on women in these communities. None of this is unique to the project site, but it is a gap in the current chapter that deserves its own line rather than being folded into general population data.

4.9.15 Security and Crime Situation

Anambra State, and Awka in particular, has seen a rise in security concerns tied closely to land disputes, with police and community leaders repeatedly pointing to land grabbing as a root cause behind kidnapping, assault and even killings in recent years. Reports also describe intercommunal tension in parts of the wider Awka capital territory. This is directly relevant to a residential project on a corridor already flagged as sensitive, since it means the security

context around land acquisition and site security during construction carries more weight here than a routine urban infill project might elsewhere.

4.9.16 Migration and Population Movement

Awka South's population growth is driven heavily by in migration, civil servants relocating for government work, students coming through Nnamdi Azikiwe University, and traders and professionals drawn by the city's role as state capital. This inflow is part of why the neighbourhood is described as undergoing rapid residential and commercial transformation. A new residential development in this corridor is essentially building into an area shaped by continuous newcomer settlement rather than a static, long rooted population.

4.9.17 Gender Roles and Access to Resources

As in much of southeastern Nigeria, land ownership and inheritance in Awka South customary practice still tends to favour male family lines, even though women carry much of the visible economic activity through trading along roads and markets like Eke Awka. This imbalance shapes who has a formal say in land transactions tied to the project and who is more exposed when disputes or disruption occur.

4.9.18 Waste Management Practices

Waste management in the project's host area falls within Awka South LGA, which the Anambra State Waste Management Authority, ASWAMA, places in its urban service band, the highest of the three bands it uses for service levels and billing across the state, alongside Onitsha North, Onitsha South and Nnewi North. In principle this should mean the most complete coverage available anywhere in Anambra, and ASWAMA's stated policy is to replace street dumping with organised house to house collection, backed by waste bins placed at strategic points. In practice, coverage along busy mixed-use corridors such as Old Enugu/Onitsha Road is uneven, and open dumping and occasional burning remain common where roadside trading generates waste faster than collection can keep up. Businesses and residents along the corridor generally rely on a mix of ASWAMA-licensed collectors, private waste collectors, and self-managed disposal, rather than one uniform system. This is the wider setting the estate's own waste management approach, described in Section 3.9.4 and Section 3.10, is designed to sit apart from and improve on.

4.10 Sensitive Receptors

The identification of sensitive receptors within and around the project area is of critical importance for the assessment of potential impacts and the formulation of appropriate mitigation measures. The following sensitive receptors have been identified on the basis of field observations and desktop review:

- i. The International Convention Centre (ICC), Awka - a major public facility that regularly attracts large gatherings for conferences, exhibitions and public events, located within the broader vicinity of the project site. Construction activities generating significant dust or noise may affect users of the ICC, particularly during events. This receptor is accorded high sensitivity in the impact assessment.
- ii. The Old Enugu/Onitsha Road corridor - a major traffic artery experiencing significant daily vehicular movement. Construction vehicles accessing the site will share this road, and their movements may temporarily affect traffic flow and road safety. This corridor is accorded medium to high sensitivity.
- iii. Neighbouring residential and commercial buildings - properties in the immediate vicinity of the project site that may be affected by construction noise, vibration and dust. These receptors are accorded medium sensitivity.
- iv. The Rotic Aluminium Extrusion facility and other commercial/industrial operations in the vicinity - businesses that could be affected by construction-related disruptions to traffic flow or utilities. These are accorded medium sensitivity.
- v. Ongoing construction projects within the vicinity - these represent cumulative impact receptors that, when considered together with the proposed project, may give rise to more significant combined impacts on the neighbourhood environment than any single project would produce in isolation. This dimension of sensitivity is addressed in the cumulative impact assessment in Section 5.5.

4.11 Summary of Baseline Environmental Conditions

The baseline assessment confirms that the project site and its immediate environment present the following principal characteristics relevant to the impact assessment:

- i. The site is located on gently undulating terrain within an urban zone undergoing rapid development, with GPS-confirmed elevations ranging from 160 to 190 feet (49–58 metres) across the five reference points surveyed.
- ii. Soils are predominantly sandy loam to clay loam, moderately to near-neutral in pH, of moderate organic content, free of significant heavy metal contamination, and susceptible to erosion if left exposed during construction.
- iii. Groundwater quality is satisfactory for most chemical parameters but is compromised by elevated TSS, elevated BOD₅, the presence of total coliforms, and objectionable physical properties, rendering the site well water unsuitable for consumption without adequate treatment.
- iv. Ambient air quality is good, with all monitored parameters within applicable guideline values, against a background of moderate urban traffic influence.
- v. The noise environment is consistent with a mixed residential-commercial setting, with moderately elevated daytime noise levels attributable primarily to traffic on the Old Enugu/Onitsha Road.
- vi. Ecological values within the project footprint are low, consistent with a heavily disturbed urban environment; no protected species or habitats were identified.
- vii. The socio-economic environment is characterised by a rapidly urbanising, economically active population with adequate but imperfect infrastructure, and the presence of significant institutional facilities that function as sensitive receptors for noise and dust management purposes.

This characterisation of baseline conditions provides the foundation for the identification, prediction and evaluation of the potential environmental and social impacts of the proposed project, as set out in Chapter Five.

CHAPTER FIVE

IMPACT IDENTIFICATION AND ASSESSMENT

5.1 Introduction and Methodology

This chapter presents the systematic identification, prediction and evaluation of the potential environmental and social impacts of the proposed Zion Garden Residence project. The assessment covers all phases of the project's life cycle site preparation, construction, operation and eventual decommissioning and examines interactions between project activities and the baseline environmental and socio-economic conditions described in Chapter Four.

The assessment methodology adopted is consistent with the requirements of the Environmental Impact Assessment Act, Cap E12, the Environmental Impact Assessment Procedures and Charges Regulations, 2021, and Part 8 of the Anambra State Environmental Management, Protection and Administration Law, 2024, which under Section 228 requires that an EIA Report include an assessment of the likely or potential environmental impacts of the proposed project, including direct, indirect, cumulative, short-term and long-term effects. Section 229 of the 2024 Law further requires that environmental effects be assessed with a degree of detail commensurate with their likely environmental significance. Section 237 of the 2024 Law specifies the factors that the EIA Committee shall consider, including the environmental effects of accidents or malfunctions and cumulative effects when taken in combination with other projects. These statutory requirements have guided both the scope and the depth of this assessment.

5.1.1 Impact Identification Approach

Potential impacts were identified through a systematic analysis of the interactions between each significant project activity and each environmental and social receptor identified in the baseline assessment. This process utilised a project activity-receptor matrix approach, supplemented by field observations, review of project design documentation, professional judgment and reference to published literature on comparable residential estate development projects in Nigeria. Impacts arising from normal project operations, from accidental events and

from the cumulative interaction of the project with other developments in the area were all considered.

5.1.2 Impact Evaluation Criteria

Each identified impact was evaluated against the following criteria, as required by applicable guidelines and the provisions of Section 228(d) of the Anambra State Environmental Management, Protection and Administration Law, 2024:

- i. Nature: whether the impact is beneficial or adverse.
- ii. Magnitude: the scale or severity of the change induced, rated as minor, moderate or major.
- iii. Spatial extent: whether the impact is localised (confined to the project site), local (within approximately 500 metres of the site), or wider.
- iv. Duration: whether the impact is temporary (confined to the construction phase), medium-term (months to years) or long-term/permanent (lasting through the operational life of the project).
- v. Reversibility: whether the impacted environmental component can recover to its pre-project condition if the impact ceases.
- vi. Probability: the likelihood that the impact will actually occur, rated as low, medium or high.
- vii. Significance: the overall importance of the impact, determined by weighting the above criteria, rated as negligible, low, moderate or high.

The significance rating integrates all of the above criteria and provides the basis for prioritising mitigation efforts. A high significance rating indicates that the impact requires robust and carefully monitored mitigation measures, whilst a low or negligible rating indicates that standard good practice measures are sufficient.

5.2 Construction Phase Impacts

Construction activities will constitute the most intensive period of environmental interaction, given the combination of site clearing, earthworks, foundation preparation, road construction, drainage channel excavation and utility installation that will take place over the estimated

construction period of twelve to eighteen months. The principal impacts identified for this phase are assessed below.

5.2.1 Dust Generation and Air Quality Deterioration

Dust will be generated during site clearing, excavation for drainage channels and utility trenches, road earthworks and surfacing, movement of construction vehicles on unpaved haul routes, stockpiling and handling of excavated materials, and the mixing and application of cement and other fine construction materials. The sandy loam soils of the site, particularly at the surface, are susceptible to dispersion as airborne particles when disturbed.

Given the proximity of the site to the Old Enugu/Onitsha Road, to the International Convention Centre and to neighbouring residential and commercial premises, dust generation during construction is identified as a moderate to significant adverse impact of medium probability. During the Harmattan season (December to February), when north-easterly winds intensify and background dust levels are already elevated, this impact has the potential to become more pronounced. Dust deposition on neighbouring properties, vehicles and vegetation may give rise to statutory nuisance as defined under Section 255(1)(d) of the Anambra State Environmental Management, Protection and Administration Law, 2024.

5.2.2 Noise and Vibration

Noise and vibration will be generated by heavy construction plant and equipment including excavators, compactors, concrete mixers, generators, tipper trucks and other mobile plant, as well as by manual construction activities such as hammering, cutting and block-laying. Noise levels from construction activities typically range between 75 and 95 dB(A) at 10 metres from the source, depending on the equipment in operation.

The proximity of the project site to the Old Enugu/Onitsha Road, the International Convention Centre and neighbouring residential and commercial properties means that construction noise will be perceived by a significant number of sensitive receptors. Under Section 282 of the Anambra State Environmental Management, Protection and Administration Law, 2024, noise in private and public places is subject to regulation, and Section 255(1)(g) classifies noise from premises as a statutory nuisance where it is prejudicial to health or constitutes nuisance. Noise impacts are therefore assessed as moderate in magnitude, temporary in duration, and of

moderate significance overall, with the potential to become locally significant at the site frontage and at the ICC during peak construction periods.

5.2.3 Soil Disturbance, Erosion and Runoff

The clearing of vegetation, excavation of soil for drainage channels and utility trenches, and general earthworks associated with road construction will expose soil surfaces and significantly increase the site's susceptibility to erosion by surface runoff during rainfall events. Given the sandy to sandy loam character of the site soils and the intensity of rainfall in the Awka area particularly during the major rainy season from March to July the risk of soil erosion and the transport of sediments into adjacent drainage channels and road drains is assessed as significant if adequate erosion control measures are not implemented.

The ANSEWCCA, established under Part 2 of the Anambra State Environmental Management, Protection and Administration Law, 2024, has a specific mandate to address erosion and watershed management across Anambra State. The construction of this project, and any erosion resulting from inadequate site management during the rainy season, could potentially contribute to sediment loading in the local drainage network and exacerbate erosion risks in the broader vicinity. Sediment-laden runoff that enters the road drainage channels could also contribute to the blockage and degradation of those drains, potentially increasing flooding risks, a matter that falls within the jurisdiction of the Anambra State Clear Drainage and Inland Flood Management Agency under Part 3 of the 2024 Law.

5.2.4 Construction Waste Generation

Construction activities will generate a range of solid wastes, including excavated soil and rock materials, concrete and masonry debris, timber offcuts, steel offcuts and scrap, packaging materials (bags, plastics, cardboard), spent oils and lubricants from plant maintenance, and sanitary waste from workers' facilities. Improper management of construction waste including open burning, indiscriminate dumping or unauthorised disposal would constitute a violation of multiple provisions of the Anambra State Environmental Management, Protection and Administration Law, 2024, including Sections 136 (prohibition of open burning), 137 (waste to be disposed of only at approved sites), 145 (excavated silt and debris to be removed) and 352 (oversight of construction waste), and may attract enforcement action and penalties thereunder.

The construction waste impact is assessed as moderate in magnitude, localised in extent, temporary in duration and moderate in overall significance. It is readily manageable through a structured waste management approach as specified in the ESMP.

5.2.5 Traffic Disruption

The mobilisation of construction plant, the delivery of building materials to the site and the removal of construction waste will increase the volume and frequency of heavy vehicles using the Old Enugu/Onitsha Road. Given that this road already carries significant traffic volumes as a major arterial route between Awka, Enugu and Onitsha, additional construction-related traffic has the potential to create congestion at the site access point, increase the risk of road accidents involving heavy vehicles, and cause damage to the road pavement from overloaded tipper trucks.

This impact is assessed as moderate in magnitude, temporary and reversible, and of moderate overall significance. It is manageable through careful traffic management planning, co-ordination of material deliveries outside of peak traffic periods, and the maintenance of construction vehicles in roadworthy condition, as required by the Federal Road Safety Corps (FRSC) guidelines.

5.2.6 Occupational Health and Safety Risks

Construction activities inherently carry risks of workplace accidents, injuries and health impacts for workers. These include risks from the operation of heavy plant, falls from height, exposure to cement dust, electrical hazards during installation works, heat stress during outdoor work in tropical conditions and traffic accidents. These risks are governed by the Factories Act, Cap F1, Laws of the Federation of Nigeria, 2004, and by applicable ILO Occupational Health and Safety standards. The Anambra State Environmental Management, Protection and Administration Law, 2024, through its provisions on environmental health and the ESHSMP framework, also requires that health and safety considerations be addressed as an integral component of the environmental management plan.

The occupational health and safety impact is assessed as adverse, potentially of major magnitude in the event of a serious accident, but of low to moderate probability if a robust

HSE management system is in place. Its significance is rated as moderate, with the potential to escalate to high if HSE management is inadequate.

5.2.7 Positive Socio-Economic Impacts for Employment and Economic Activity

The construction phase will generate a range of positive socio-economic impacts, including direct employment for skilled and unskilled workers from the local and broader Awka community, income for local suppliers of construction materials, equipment and services, and a modest increase in commercial activity in the vicinity of the site during the construction period. These positive impacts, whilst temporary in duration, are assessed as moderate to significant in magnitude given the scale of the project and the continued demand for construction employment in the Awka area.

5.3 Operational Phase Impacts

During the operational phase, impacts will arise primarily from the activities of estate residents in their individual plots and from the management of shared estate infrastructure. These impacts are generally long-term in nature, continuous or recurring, and of lower individual intensity than construction impacts, though their cumulative and long-term significance requires careful management.

5.3.1 Wastewater and Sanitation

Individual plots within the estate will generate domestic wastewater from bathrooms, kitchens, laundries and toilets. As confirmed by the project proponent, wastewater will be managed through individual soak-away pit systems installed by each plot holder. Under Section 216(1) of the Anambra State Environmental Management, Protection and Administration Law, 2024, any person who intends to develop an estate that will accommodate a population of fifty and above is required to connect to the sewage system in the catchment area or obtain a wastewater clearance from the Wastewater Management Office in a manner approved by that Office. The proponent is accordingly advised that compliance with this specific provision will be necessary, and the ESMP requires that the proponent obtain the required wastewater clearance from the Office before commencement of operations.

In the absence of a functioning public sewerage system in the project area, soak-away pits that are adequately designed, properly sited and regularly maintained represent a workable

sanitation solution, provided that they are constructed to appropriate standards and that their influence zones do not overlap with borehole water supply installations. However, inadequately designed or poorly maintained soak-away pits carry a real risk of groundwater contamination, particularly in view of the moderate permeability of the site soils and the already elevated coliform count detected in the baseline groundwater sample from the site well. This risk is assessed as moderate to significant in the long term if soak-away standards are not enforced.

5.3.2 Solid Waste Generation

The residential occupants of the estate will generate domestic solid waste including food waste, plastics, paper, cans, glass, electrical and electronic waste and other household refuse. Inadequate solid waste management including insufficient provision of waste collection points, irregular collection intervals, or the burning of waste within the estate would contravene Sections 135, 136 and 137 of the Anambra State Environmental Management, Protection and Administration Law, 2024, and would give rise to sanitation court jurisdiction under Section 167 of that Law. The impact of solid waste generation during the operational phase is assessed as moderate in magnitude and long-term in duration, of moderate overall significance, and fully manageable through the engagement of a licensed waste collector and the enforcement of estate-level waste management rules.

5.3.3 Stormwater Runoff and Drainage

The progressive development of individual plots within the estate, through the construction of buildings, paving of driveways and other impervious surfaces, will increase the proportion of rainfall that becomes surface runoff rather than being absorbed into the soil. This increase in impervious cover is an inherent characteristic of residential estate development and will increase the volume and velocity of stormwater that must be managed by the estate's internal drainage system and discharged into the external road drainage network. If the drainage system is undersized, inadequately maintained or obstructed, localised flooding and waterlogging within the estate could occur, posing risks to residential property and to the health and safety of occupants.

Under Part 3 of the Anambra State Environmental Management, Protection and Administration Law, 2024, the Anambra State Clear Drainage and Inland Flood Management Agency is

responsible for managing the State's drainage infrastructure and preventing flooding. The estate management is under an obligation to ensure that the internal drainage system is designed to accommodate peak stormwater flows and is maintained in operational condition at all times. This impact is assessed as moderate in magnitude, long-term in duration and of moderate significance, manageable through adequate design and maintenance.

5.3.4 Increased Demand on Utilities and Infrastructure

The occupation of the estate will impose new and sustained demands on water supply, electricity and road infrastructure in the area. Given the already strained state of water and electricity supply across Awka, any significant additional demand may exacerbate existing supply deficits for surrounding communities if the estate is not provided with an adequate dedicated supply infrastructure. The proponent's commitment to a centralised borehole system and EEDC grid connection addresses these concerns to a significant extent. Traffic generation from estate residents will add modestly to the already substantial volumes using the Old Enugu/Onitsha Road but is not expected to cause disproportionate congestion at the scale of the proposed estate.

This impact is assessed as minor to moderate in magnitude, long-term in duration and of low to moderate overall significance.

5.3.5 Noise from Operational Activities

Operational noise will arise from household domestic activities, vehicle movement within and around the estate, standby generators and occasional social events. These noise sources are characteristic of any residential estate and are generally lower in intensity than construction-phase noise. However, the operation of standby generators, which is anticipated to be frequent given the intermittent nature of public electricity supply in the area, has the potential to generate sustained low- to medium-level noise that may cause nuisance to immediate neighbours, particularly during night-time hours. Section 282 of the Anambra State Environmental Management, Protection and Administration Law, 2024, prohibits noise that constitutes a nuisance in private and public places. This impact is assessed as low to moderate in significance and is manageable through the use of acoustic enclosures for generators and the enforcement of estate noise management rules.

5.3.6 Positive Socio-Economic Impacts Housing Provision and Quality of Life

The principal positive impact of the operational phase is the long-term provision of decent, safe, organised and adequately serviced residential accommodation for the households that will occupy the estate. This contributes directly to the reduction of the housing deficit in Awka South, to improvements in the living standards and quality of life of residents, and to the creation of a stable, planned and well-managed residential community. The provision of organised housing within a secure estate environment also contributes to public safety, community cohesion and the orderly development of the corridor. This impact is assessed as significant and long-term, representing the primary justification for the project.

5.3.7 Positive Impacts Government Revenue and Urban Development

The operational estate will generate sustained government revenues through property taxes, development levies and other applicable charges. It will also contribute to the continued urbanisation and economic development of the Old Enugu/Onitsha Road corridor, stimulating ancillary commercial and service sector activity and enhancing property values in the surrounding area. These benefits are assessed as moderate to significant and long-term in nature.

5.4 Impact Summary Table

Table 5.1 below provides a consolidated summary of all significant impacts identified in this assessment, their evaluated characteristics and their overall significance rating.

Table 5.1: Summary of Environmental and Social Impact Assessment

Impact	Phase	Nature	Magnitude	Duration	Reversible	Overall Significance
Dust and air quality deterioration	Construction	Adverse	Moderate	Temporary	Yes	Moderate
Noise and vibration	Construction	Adverse	Moderate	Temporary	Yes	Moderate
Soil erosion and sediment runoff	Construction	Adverse	Mod–Major	Temporary	Largely	Moderate–High
Construction waste	Construction	Adverse	Moderate	Temporary	Yes	Moderate

Impact	Phase	Nature	Magnitude	Duration	Reversible	Overall Significance
Traffic disruption	Construction	Adverse	Moderate	Temporary	Yes	Moderate
OHS risks to workers	Construction	Adverse	Major (potential)	Temporary	Yes	Moderate
Employment and economic activity	Construction	Beneficial	Moderate	Temporary	N/A	Moderate
Wastewater / groundwater risk	Operation	Adverse	Moderate	Long-term	Partially	Moderate–High
Solid waste generation	Operation	Adverse	Moderate	Long-term	Yes	Moderate
Stormwater / drainage	Operation	Adverse	Moderate	Long-term	Yes	Moderate
Utility and infrastructure demand	Operation	Adverse	Minor–Mod	Long-term	Yes	Low–Moderate
Operational noise	Operation	Adverse	Low–Mod	Long-term	Yes	Low–Moderate
Housing provision / quality of life	Operation	Beneficial	Significant	Permanent	N/A	High
Government revenue / urban development	Operation	Beneficial	Moderate	Permanent	N/A	Moderate–High

5.5 Cumulative Impacts

Cumulative impacts arise from the interaction of the proposed project's impacts with those of other past, present and reasonably foreseeable projects in the vicinity. Section 237(1)(b) of the Anambra State Environmental Management, Protection and Administration Law, 2024 requires the EIA Committee to consider cumulative environmental effects when a project is taken into consideration with other projects that have been or will be carried out, and Section 228(d) of that Law similarly mandates consideration of cumulative effects in the impact assessment.

Field observations confirmed that the project area is characterised by a concentration of active construction projects representing ongoing residential and commercial development along the

Old Enugu/Onitsha Road corridor. The cumulative impacts of the proposed project, when considered in combination with these other development activities, include the following:

- i. Combined and sustained increases in road traffic along the Old Enugu/Onitsha Road from multiple construction projects operating simultaneously or in close succession, potentially creating persistent rather than merely temporary congestion and safety risks.
- ii. Accumulative pressure on the road drainage network from the collective increase in impervious surface cover associated with multiple development projects, increasing the risk of drainage overload and localised flooding a concern that falls directly within the mandate of the Anambra State Clear Drainage and Inland Flood Management Agency under Part 3 of the Anambra State Environmental Management, Protection and Administration Law, 2024.
- iii. Progressive depletion of groundwater recharge potential as the proportion of the corridor covered by impervious surfaces increases with each successive development, potentially affecting long-term groundwater availability in an area dependent on boreholes and wells for domestic water supply.
- iv. Cumulative increase in ambient noise and dust levels during periods of simultaneous construction activity across multiple sites in the corridor, which may collectively approach or exceed nuisance thresholds even where individual project impacts would not, and which could cumulatively affect the amenity and operations of the International Convention Centre.
- v. Incremental reduction in urban open space and green cover as each additional development project absorbs previously undeveloped land, with implications for urban heat island effects, biodiversity and the character of the neighbourhood.

Whilst no single project in isolation, including the proposed Zion Garden Residence, is expected to give rise to unacceptable cumulative impacts, the collective effect of the development intensity of the corridor warrants close attention from the relevant regulatory bodies including ANSEMPAL, ANSEWCCA and the Anambra State Clear Drainage and Inland Flood Management Agency to ensure that co-ordinated environmental management is applied at the corridor level and not merely on a project-by-project basis.

5.6 Residual Impacts

Residual impacts are those that remain after all proposed mitigation measures have been applied. For the proposed project, based on the adoption of the full suite of mitigation and management measures set out in Chapter Six and the ESMP in Chapter Seven, the residual impacts are assessed as follows:

- i. Dust, noise and traffic impacts during construction will be reduced to low to moderate significance through the implementation of water spraying, restricted working hours, acoustic barriers where necessary, traffic management and equipment maintenance. Residual impacts will be temporary and will cease on completion of construction.
- ii. Erosion and sediment runoff risks will be reduced to low significance through phased earthworks, temporary erosion control measures and prompt re-vegetation. Residual impacts will be confined to individual rainfall events during the construction period.
- iii. Wastewater management risks will be reduced to low to moderate significance through the enforcement of adequate soak-away standards, the obtainment of wastewater clearance under Section 216 of the 2024 Law, and regular inspection of sanitation facilities. A residual risk of incremental groundwater quality deterioration remains in the long term if individual plot holders fail to maintain their soak-away systems adequately.
- iv. Solid waste impacts will be reduced to low significance through the engagement of a licensed waste collector, provision of adequate storage infrastructure and estate waste management rules.
- v. The positive impacts of housing provision, employment generation and urban development will be fully realised and are not subject to mitigation.

Overall, the residual impact profile of the project, after the application of recommended mitigation measures, is assessed as acceptable. The project will not give rise to any significant, irreversible or unmitigable adverse environmental impacts. The finding of this assessment is that the project is environmentally acceptable, subject to full compliance with the Environmental and Social Management Plan presented in Chapter Seven and with all applicable requirements of the EIA Act, Cap E12, the 2021 EIA Regulations and the Anambra State Environmental Management, Protection and Administration Law, 2024.

5.7 Knowledge Gaps and Uncertainties

In accordance with the requirements of Section 228(f) of the Anambra State Environmental Management, Protection and Administration Law, 2024, the following gaps in knowledge and sources of uncertainty encountered during this assessment are identified:

- i. The precise number and density of individual residential buildings to be constructed within the estate over time is not yet known, as this will be determined by individual plot holders. This uncertainty affects the precision of assessments relating to wastewater generation, domestic water demand and traffic generation during the operational phase. These assessments have accordingly been made on the basis of reasonable planning assumptions.
- ii. No formal geotechnical investigation report for the project site was available at the time of this assessment. The soil analysis results and topographic observations made during field investigations provide a basis for qualitative geotechnical assessment, but a formal geotechnical investigation and foundation design report should be commissioned and reviewed before commencement of earthworks.
- iii. Detailed noise level measurements in dB(A) were not available from the baseline data provided; the noise environment assessment in Chapter 4 has therefore been based on qualitative field observations and general knowledge of the noise character of the project area. A quantitative baseline noise survey should be conducted prior to commencement of construction.
- iv. Climate change projections for the specific micro-climate of the Awka area are based on regional modelling and are subject to inherent uncertainties. The range of design rainfall intensities and climate-related risks identified in this Report reflects the best available information at the time of preparation.

CHAPTER SIX

MITIGATION MEASURES

6.1 Introduction

This chapter presents the detailed mitigation and enhancement measures recommended to address each of the significant environmental and social impacts identified and assessed in Chapter Five. The measures have been developed in direct correspondence with the impact assessment findings and are designed to be practical, cost-effective and fully implementable within the operational and financial capacity of the project proponent and its contractors. Where relevant, they are anchored in the obligations imposed by the Environmental Impact Assessment Act, Cap E12, the Environmental Impact Assessment Procedures and Charges Regulations, 2021, and the Anambra State Environmental Management, Protection and Administration Law, 2024, which under Section 228(e) requires that an EIA Report include an identification, description and assessment of measures available to mitigate any adverse environmental impacts of the proposed project.

In accordance with the established hierarchy of mitigation, measures are classified in the following order of preference: prevention eliminating the impact at source before it occurs; reduction minimising the magnitude or extent of the impact through design or operational controls; mitigation offsetting unavoidable adverse effects through targeted actions; and enhancement amplifying identified positive impacts to maximise their benefit to the host community and environment. Each recommended measure is accompanied by an indication of the implementing party, the applicable regulatory reference and the timing of implementation.

These mitigation measures collectively constitute the technical and management foundation of the Environmental and Social Management Plan (ESMP) presented in Chapter Seven. They have been formulated with due regard to the sensitivities of the project area, the nature of the receiving environment, the proximity of significant sensitive receptors including the International Convention Centre (ICC), Awka, and the obligations imposed by Parts 3, 6, 8, 9 and 11 of the Anambra State Environmental Management, Protection and Administration Law, 2024.

6.2 Construction Phase Mitigation Measures

6.2.1 Dust Control and Air Quality Protection

Given the proximity of the project site to the Old Enugu/Onitsha Road, the ICC and neighbouring residential and commercial properties, the control of construction dust is a primary environmental management obligation. The legal basis for this obligation is grounded in Section 255(1)(d) of the Anambra State Environmental Management, Protection and Administration Law, 2024, which classifies dust and effluvia arising from premises that are prejudicial to health or constitute a nuisance as statutory nuisances, and in Section 288 of the same Law, which prohibits the discharge into the environment of substances that are harmful or injurious to health. The following measures shall accordingly be implemented by the contractor under the supervision of the site Environmental Officer:

- i. All exposed soil surfaces, unpaved access tracks, material stockpiles and excavated areas shall be watered by bowser or hand-held spray at a frequency sufficient to suppress visible dust generation, with a minimum frequency of twice daily during dry and windy conditions and continuously during Harmattan periods (December to February) when background dust levels are already elevated.
- ii. Stockpiles of sand, laterite, aggregate, cement and other fine particulate construction materials shall at all times be covered with tarpaulins or stored in enclosed bays when not actively in use.
- iii. All tipper trucks, delivery vehicles and other vehicles transporting loose or particulate materials to, from or within the site shall have their loads securely covered with tarpaulins before departure from the loading point.
- iv. Construction activities that generate excessive dust including dry excavation, demolition and dry cement mixing shall be suspended during high-wind conditions and shall, where practicable, be scheduled for the cooler parts of the day when wind speeds are typically lower.
- v. All workers engaged in dusty activities including excavation, cement mixing, block-laying and material handling shall be provided with appropriate respiratory personal protective equipment (PPE), comprising dust masks conforming to applicable Nigerian Standards Institute standards.

- vi. Site access tracks and internal haul roads shall be maintained in a dampened condition to prevent tyre-generated dust from vehicle movements.
- vii. All plant, equipment and vehicles shall be maintained in good working order to minimise exhaust emissions, in conformity with Section 287 of the Anambra State Environmental Management, Protection and Administration Law, 2024, which requires all vehicles and generating plants to meet prescribed air emission standards.

6.2.2 Noise and Vibration Control

Noise from construction activities is regulated under Section 282 of the Anambra State Environmental Management, Protection and Administration Law, 2024, which prohibits noise that constitutes or is likely to cause nuisance in residential places, and under the National Environmental (Noise Standards and Control) Regulations, 2009 (NESREA). Noise impacts are assessed as manageable through the following measures:

- i. All construction activities shall be confined to daytime working hours, specifically between 07:00 hours and 18:00 hours on weekdays, and between 08:00 hours and 14:00 hours on Saturdays. No construction activities shall be conducted on Sundays or on public holidays without the prior written consent of the relevant regulatory authority and advance notification to neighbouring properties.
- ii. All construction plant and equipment shall be maintained in proper working order with functional exhaust silencers and acoustic enclosures. Equipment that emits excessive noise due to mechanical defect shall be taken out of service and repaired before being returned to operation.
- iii. Particularly noisy operations including compaction, pile driving if required, concrete breaking and large-scale excavation shall be undertaken in the middle of the working day, away from the early morning and late afternoon periods when noise nuisance to residents is most likely to be experienced.
- iv. The contractor shall provide advance written notice to occupants of neighbouring properties and to the management of the ICC at least seventy-two (72) hours before the commencement of any works that are expected to generate unusually high noise levels.
- v. Temporary acoustic barriers, constructed of timber hoarding, corrugated iron sheeting or other suitable materials, shall be erected along the boundaries of the site that are

- closest to residential and institutional sensitive receptors, where determined to be practicable and effective by the site Environmental Officer.
- vi. All workers exposed to noise levels at or above 85 dB(A) shall be provided with appropriate hearing protection in the form of ear muffs or ear plugs, in accordance with occupational health and safety requirements under the Factories Act, Cap F1.

6.2.3 Soil Erosion and Runoff Control

The management of soil erosion during construction is a matter of heightened regulatory concern in Anambra State, given the explicit mandate of the Anambra State Erosion, Watershed and Climate Change Agency (ANSEWCCA), established under Part 2 of the Anambra State Environmental Management, Protection and Administration Law, 2024, to prevent and control erosion and watershed degradation across the State. The following erosion control measures shall be strictly applied:

- i. Land clearing and excavation shall be undertaken in carefully phased stages, exposing only those areas of soil that are required for active construction during any given period. The total area of exposed, unprotected soil shall be minimised at all times.
- ii. Temporary bunds, berms or sandbag barriers shall be installed along the lower boundaries of any excavated or graded areas to intercept surface runoff and prevent the transport of sediment off the site and into the road drainage channels along the Old Enugu/Onitsha Road.
- iii. Temporary drainage channels or diversion drains shall be constructed to direct surface runoff from higher parts of the site safely to designated silt traps or settlement ponds before any discharge.
- iv. Excavated materials suitable for re-use in backfilling or road sub-base preparation shall be stockpiled in designated areas within the site, clearly demarcated and protected from erosion by covers or compaction. Surplus materials shall be removed from the site within five working days to prevent destabilisation by rain.
- v. Backfilling of all trenches, foundation excavations and drainage channel excavations shall be undertaken and compacted as promptly as practicable after the completion of the relevant structure or installation, to minimise the period during which excavated soils remain exposed.

- vi. Immediately upon completion of all civil and structural works in any given area of the site, that area shall be seeded or planted with grass or other suitable ground cover vegetation to stabilise the soil surface and prevent erosion. Landscaping and tree planting within the estate shall proceed as soon as site conditions permit, in fulfilment of the proponent's landscaping commitment and in accordance with Section 79 of the Anambra State Environmental Management, Protection and Administration Law, 2024, which requires the landscaping of tenements.
- vii. Construction activities involving significant soil disturbance shall, where scheduling permits, be phased to avoid the peak rainy season (June to July) when rainfall intensity is highest and erosion risk is greatest.

6.2.4 Construction Waste Management

The management of construction waste is governed by multiple provisions of the Anambra State Environmental Management, Protection and Administration Law, 2024, including Section 136 (prohibition of open burning of waste), Section 137 (requirement that waste be deposited only at approved disposal sites), Section 145 (requirement for the removal of excavated silt, earth and debris), and Section 352 (oversight of construction waste). The contractor shall implement the following waste management measures in full compliance with these provisions:

- i. Construction waste shall be segregated at source into the following categories: clean excavated soil and earthworks materials suitable for re-use; concrete and masonry debris; metallic waste (steel, pipes, fittings); timber offcuts; packaging waste (plastics, cardboard, bags); and sanitary waste. Separate, clearly labelled waste storage areas shall be provided for each category.
- ii. Clean excavated soil suitable for backfilling or road sub-base preparation shall be re-used within the site as a priority measure to minimise the volume of waste requiring off-site disposal.
- iii. Recyclable materials, including steel offcuts and scrap, shall be segregated and made available for collection by licensed recyclers, in preference to disposal as general waste.
- iv. All construction waste that cannot be re-used or recycled on site shall be collected and transported by a licensed private waste collector, registered with the Anambra State

Waste Management Authority (ASWAMA) in accordance with Section 152 of the Anambra State Environmental Management, Protection and Administration Law, 2024, and shall be deposited only at waste disposal sites approved by ASWAMA in accordance with Section 139 of that Law.

- v. Open burning of waste on the construction site is strictly prohibited under Section 136 of the Anambra State Environmental Management, Protection and Administration Law, 2024. Any contractor found to be in breach of this prohibition shall be subject to immediate suspension and disciplinary action.
- vi. Portable toilet facilities of adequate number and standard shall be provided for construction workers at all times, and shall be serviced and emptied at intervals not exceeding one week by a licensed sewage dislodging operator registered with the Wastewater Management Office in accordance with Part 7 of the Anambra State Environmental Management, Protection and Administration Law, 2024. The discharge of sanitary waste onto the site ground surface or into drainage channels is strictly prohibited.

6.2.5 Traffic Management

Construction traffic management shall be implemented in accordance with the guidelines of the Federal Road Safety Corps (FRSC) and the applicable provisions of the Road Traffic Law of Anambra State, with the following specific measures:

- i. A Traffic Management Plan shall be prepared by the contractor before the commencement of construction and submitted to the site Environmental Officer and the proponent for review. The Plan shall identify haulage routes, access and egress points, delivery schedules and procedures for managing pedestrian safety in the vicinity of the site entrance on the Old Enugu/Onitsha Road.
- ii. The delivery of bulk construction materials including sand, gravel, blocks and concrete shall be scheduled as far as practicable outside of peak traffic hours (typically 07:30–09:00 and 16:30–18:30) in order to minimise construction-related additions to existing road congestion.
- iii. Trained traffic marshals shall be deployed at the site entrance on the Old Enugu/Onitsha Road during the entry and exit of all heavy vehicles. Warning signs, reflective cones

and barricades shall be positioned to guide pedestrian and vehicular traffic safely around construction activities.

- iv. All construction vehicles operating on or from the site shall be maintained in roadworthy condition in accordance with applicable FRSC standards. Overloading of tipper trucks and other delivery vehicles is prohibited.
- v. The site entrance and any sections of the Old Enugu/Onitsha Road that are affected by construction vehicle movements shall be kept clean and free of mud, construction debris and loose materials. Any spillage of materials from construction vehicles onto the public road shall be cleared promptly.

6.2.6 Occupational Health and Safety

Occupational health and safety (OHS) management during construction shall comply with the requirements of the Factories Act, Cap F1, Laws of the Federation of Nigeria, 2004, the applicable ILO Occupational Safety and Health standards, and the ESHSMP framework established under Part 8 of the Anambra State Environmental Management, Protection and Administration Law, 2024. The following measures shall be implemented:

- i. A site-specific Occupational Health and Safety Plan shall be prepared by the contractor before commencement of construction and shall be reviewed and approved by the proponent. The Plan shall identify all foreseeable construction hazards, specify the control measures to be applied and establish emergency response procedures.
- ii. All workers shall undergo a mandatory HSE induction on their first day on site, covering site safety rules, hazard identification, emergency procedures, fire safety and the proper use of PPE. Toolbox talks shall be conducted on a weekly basis by the site safety officer.
- iii. Appropriate PPE including safety helmets, safety boots, high-visibility vests, gloves, dust masks and, for relevant operations, hearing protection and eye protection shall be provided to all workers at no cost to the worker and its use shall be strictly enforced at all times on the construction site.
- iv. A first aid kit of appropriate standard, and a trained first aider, shall be present on the construction site at all times during working hours. An emergency response plan,

- including the identification of the nearest hospital or clinic for emergency treatment, shall be prepared and communicated to all workers.
- v. Excavations deeper than 1.2 metres shall be adequately shored, benched or battered to prevent collapse, in accordance with applicable safety standards. Warning barriers and signage shall be erected around all open excavations.
 - vi. A site accident register shall be maintained and all accidents, near-misses and occupational illnesses shall be recorded and reported to the site Environmental and Safety Officer within 24 hours of occurrence. Fatal accidents and major injuries shall be reported immediately to the relevant regulatory authorities.

6.3 Operational Phase Mitigation and Enhancement Measures

6.3.1 Wastewater Management

In accordance with the requirements of Section 216(1) of the Anambra State Environmental Management, Protection and Administration Law, 2024, which mandates that any estate developer accommodating a population of fifty or more must obtain a wastewater clearance from the Wastewater Management Office, and the provisions of Part 7 of that Law governing wastewater management generally, the following wastewater management requirements shall be incorporated into the estate rules and regulations and enforced by the estate management:

- i. Prior to the first occupation of any plot within the estate, the proponent shall obtain the required wastewater clearance from the Wastewater Management Office as required under Section 216(1) of the Anambra State Environmental Management, Protection and Administration Law, 2024, and shall submit evidence of such clearance to ANSEMPAL as part of the post-EIA compliance documentation.
- ii. Each plot holder shall be required, as a condition of occupying their plot within the estate, to construct an adequately designed soak-away pit system prior to occupation. The design of soak-away pits shall comply with applicable Nigerian standards for subsurface wastewater disposal and shall take into account the soil permeability, groundwater depth and the separation distance from any water supply borehole or well within the estate.
- iii. The estate rules shall prohibit the discharge of any raw sewage, wastewater or poorly treated effluent into the estate drainage channels, the road drains or any surface water

- channel, as required under Sections 219 and 221 of the Anambra State Environmental Management, Protection and Administration Law, 2024. Violation of this prohibition shall be subject to penalties under that Law and may result in the forfeiture of plot occupation rights.
- iv. Soak-away pits shall be inspected at intervals not exceeding two years by a licensed sanitation inspector, and shall be desludged when required by a licensed sewage dislodging operator registered with the Wastewater Management Office in accordance with Part 7 of the 2024 Law. Desludged septage shall be transported only to disposal points approved by the Wastewater Management Office.
 - v. The estate management shall ensure that the minimum separation distance of 15 metres between any soak-away pit installation and any water supply borehole or well within the estate is maintained at all times, in order to protect groundwater quality from faecal contamination.

6.3.2 Solid Waste Management

Operational solid waste management shall comply with the requirements of Part 6 of the Anambra State Environmental Management, Protection and Administration Law, 2024 governing the Anambra State Waste Management Authority (ASWAMA), and specifically with Sections 135, 136, 137 and 140 of that Law. The following measures shall be implemented and enforced by the estate management throughout the operational phase:

- i. The estate management shall engage a licensed Private Waste Collector registered with ASWAMA in accordance with Section 152 of the Anambra State Environmental Management, Protection and Administration Law, 2024, for the regular collection and approved disposal of all domestic solid waste generated within the estate. Waste collection shall be scheduled at a minimum frequency of twice weekly and shall not be reduced below this frequency.
- ii. Communal waste storage points, equipped with colour-coded covered waste bins for the separate storage of organic waste, recyclables and general refuse, shall be provided at conveniently located positions within the estate. The number and placement of bins shall be determined on the basis of the expected resident population and in accordance with ASWAMA's standard requirements.

- iii. Open burning of waste of any kind within the estate is strictly prohibited under Section 136 of the Anambra State Environmental Management, Protection and Administration Law, 2024. Residents in violation of this prohibition shall be reported to ASWAMA and the relevant sanitation court established under Section 167 of that Law.
- iv. The estate management shall ensure that vacant and undeveloped plots within the estate are kept clean and free of refuse deposits, in accordance with Section 140 of the Anambra State Environmental Management, Protection and Administration Law, 2024, which requires the owner or caretaker of undeveloped plots in built-up areas to keep such plots clean.
- v. The estate management shall prepare and distribute to all residents an Estate Waste Management Guide, setting out residents' obligations regarding waste storage, segregation and the proper use of collection services, and providing contact information for ASWAMA and the licensed waste collector.

6.3.3 Stormwater and Drainage Management

In fulfilment of the obligations of the proponent and estate management under Part 3 of the Anambra State Environmental Management, Protection and Administration Law, 2024, which establishes the Anambra State Clear Drainage and Inland Flood Management Agency and mandates proper drainage management across the State, the following operational drainage measures shall be implemented:

- i. The estate's internal surface drainage channels shall be inspected and cleared of debris, sediment and vegetation growth at a minimum frequency of once monthly and additionally following any heavy rainfall event that results in visible drainage obstruction.
- ii. Plot holders shall be required, as a condition of the estate rules and regulations, to ensure that the drainage of stormwater from their individual plots is directed into the estate's internal drainage channels in accordance with the estate design and not into neighbouring plots or onto the internal roads in a manner that causes flooding or erosion.
- iii. The estate management shall monitor the condition of the connection point between the estate's internal drainage system and the road drainage channels along the Old

Enugu/Onitsha Road, and shall notify the Anambra State Clear Drainage and Inland Flood Management Agency promptly of any blockage, damage or flooding affecting this connection.

- iv. As individual plots are developed and impervious surfaces increase, the estate management shall review the adequacy of the internal drainage channels to accommodate increased runoff volumes and shall commission drainage upgrade works as necessary, in consultation with a qualified civil engineer.

6.3.4 Noise Management

Operational noise management shall comply with Section 282 of the Anambra State Environmental Management, Protection and Administration Law, 2024, which prohibits noise in residential areas that causes or is likely to cause nuisance. The following measures shall be incorporated into the estate rules and regulations:

- i. The operation of standby electricity generating sets within individual plots shall be restricted to essential use only and shall be prohibited between the hours of 23:00 and 06:00. All generating sets shall be housed within purpose-built acoustic enclosures or fitted with appropriate silencers to minimise noise transmission beyond the plot boundary.
- ii. The use of amplified sound systems, public address equipment or musical instruments at levels likely to cause nuisance to neighbouring plots or adjoining properties is prohibited during the hours of 22:00 to 07:00. Any public event requiring amplification shall require the prior permission of the estate management and, where required by applicable regulations, a permit from the relevant authority under Section 282 of the 2024 Law.
- iii. The estate management shall establish a noise complaints procedure through which residents may report noise nuisance to the estate manager, who shall investigate and resolve complaints within five working days. Persistent and unresolved noise nuisance may be referred to the Anambra State Environmental Protection Unit for enforcement action under Part 11 of the 2024 Law.

6.3.5 Landscaping, Tree Planting and Green Space Management

The provision and maintenance of landscaping, trees and green spaces within the estate is both an environmental management obligation and a compliance requirement under the Anambra State Environmental Management, Protection and Administration Law, 2024. Section 79 of that Law requires the landscaping of tenements, and Section 82 imposes a mandatory obligation for tree planting and anniversary replanting. The following measures shall be implemented by the estate management:

- i. The estate management shall develop a Landscaping and Planting Plan for all common open spaces within the estate, specifying the species, spacing and maintenance requirements for all trees, shrubs and ground cover to be planted. The Plan shall be submitted to ANSEMPAL for information within six months of the commencement of estate operations.
- ii. In fulfilment of Section 82 of the Anambra State Environmental Management, Protection and Administration Law, 2024, trees shall be planted within the estate's open and common areas on an annual basis. Priority shall be given to indigenous and ecologically appropriate species that are tolerant of the urban conditions of the Awka area and that provide shade, carbon sequestration and habitat for urban wildlife.
- iii. Plot holders shall be encouraged and incentivised by the estate management to plant trees and maintain gardens within their individual plots, thereby contributing to the aggregate green cover of the estate and the broader urban neighbourhood.
- iv. All trees planted within the estate common areas shall be maintained in a healthy condition and replaced within one growing season in the event of death or removal.

6.3.6 Water Supply and Water Quality Management

In order to protect the health of estate residents and ensure compliance with applicable drinking water quality standards, the following water supply management measures shall be implemented:

- i. Before any borehole or well within the estate is commissioned as the primary or supplementary water supply source, a comprehensive water quality analysis shall be conducted by an accredited laboratory to confirm that the water meets Nigerian drinking water quality standards (NIS 554:2015 or its successors). The results of this

- analysis shall be submitted to ANSEMPAL and to the estate management prior to first use;
- ii. Where borehole or well water does not meet applicable drinking water quality standards without treatment, an appropriate water treatment system such as filtration, chlorination or ultraviolet disinfection shall be installed and maintained in operational condition at all times. Water shall not be distributed for drinking purposes from any source that has not been confirmed to meet quality standards;
 - iii. Water quality testing of the estate water supply shall be conducted at a minimum frequency of twice annually during the operational phase. The results shall be made available to residents and submitted to the relevant regulatory authority on request;
 - iv. The minimum separation distance of 15 meters between the borehole head and any soak-away pit within the estate shall be enforced and documented.

6.4 Decommissioning Phase Mitigation Measures

Although decommissioning represents a distant future event in the life cycle of this project, its potential environmental and social impacts require advance consideration in this EIA Report, in accordance with the requirements of the Environmental Impact Assessment Procedures and Charges Regulations, 2021. The following mitigation measures are proposed for the decommissioning phase:

- i. Prior to the commencement of any decommissioning or demolition activities, the project proponent shall notify the ANSEMPAL and the Anambra State Ministry of Environment in writing at least three calendar months in advance, and shall prepare and submit for approval a Detailed Decommissioning Plan consistent with the framework set out in this Report;
- ii. All occupied premises shall be vacated in an orderly manner, with adequate notice given to residents in accordance with applicable tenancy and property laws, before any structural demolition commences;
- iii. Demolition activities shall be carried out using controlled methods including staged demolition, pre-wetting of surfaces and the use of appropriate equipment to minimise dust generation and prevent the release of demolition debris beyond the site boundary.

The dust suppression measures specified in Section 6.2.1 shall apply mutatis mutandis to the decommissioning phase;

- iv. Demolition waste shall be segregated into reusable materials, recyclable materials and non-recyclable waste. Reusable materials shall be salvaged and made available for alternative use. Recyclable materials including steel, aluminium, glass and timber shall be sent to registered recycling facilities. Non-recyclable waste shall be transported by a licensed waste handler to a designated disposal site approved by ASWAMA;
- v. Upon completion of all demolition works, the site shall be regraded to ensure positive drainage, backfilled where necessary, compacted and re-vegetated with suitable vegetation to prevent erosion and restore ecological function.

6.5 Summary of Mitigation Measures

Table 6.1 below provides a consolidated reference summary of all key mitigation measures recommended in this chapter, mapped against the corresponding impacts identified in Chapter Five.

Table 6.1: Consolidated Summary of Recommended Mitigation and Enhancement Measures

Impact	Phase	Key Mitigation Measures	Implementing Party	Regulatory Reference
Dust / air quality	Const.	Water spraying; cover stockpiles; cover vehicles; PPE; equipment maintenance	Contractor / Env. Officer	S.255(1)(d); S.287 ANSEMPAL Law 2024; NESREA Air Quality Regs
Noise and vibration	Const.	Restrict work hours 07:00–18:00; silencers; advance notice; acoustic barriers	Contractor / Env. Officer	S.282 ANSEMPAL Law 2024; NESREA Noise Regs 2009
Soil erosion / runoff	Const.	Phased clearing; temporary bunds and drains; prompt backfill; re-vegetation	Contractor / Env. Officer	Part 2 ANSEMPAL Law 2024 (ANSEWCCA); EIA Regs 2021
Construction waste	Const.	Segregation; re-use; licensed disposal contractor; no burning; portable toilets	Contractor / ASWAMA	S.136,137,145,152,352 ANSEMPAL Law 2024
Traffic disruption	Const.	Traffic Mgt. Plan; off-peak deliveries; traffic	Contractor	FRSC Guidelines; Road Traffic Law

Impact	Phase	Key Mitigation Measures	Implementing Party	Regulatory Reference
		marshals; road maintenance		
OHS risks	Const.	HSE Plan; induction; PPE; first aid; excavation shoring; accident register	Contractor / Safety Officer	Factories Act Cap F1; ILO OHS Standards
Wastewater / groundwater	Oper.	Obtain wastewater clearance; adequate soak-away; 15 m separation; inspection	Proponent / Estate Mgt.	S.216(1), Part 7 ANSEMPAL Law 2024
Solid waste	Oper.	Licensed ASWAMA collector; colour-coded bins; no burning; vacant plot upkeep	Estate Mgt. / ASWAMA	S.135,136,137,140,152 ANSEMPAL Law 2024
Stormwater / drainage	Oper.	Monthly drain clearance; plot drainage rules; drainage upgrade as needed	Estate Management	Part 3 ANSEMPAL Law 2024
Operational noise	Oper.	Generator enclosures; night-time restrictions; complaints procedure	Estate Management	S.282 ANSEMPAL Law 2024
Landscaping / green space	Oper.	Planting plan; annual tree planting; indigenous species; maintain trees	Estate Management	S.79, S.82 ANSEMPAL Law 2024
Water supply quality	Oper.	Pre-commissioning quality test; treatment system; bi-annual testing	Proponent / Estate Mgt.	NIS 554:2015; ANSEMPAL Law 2024
Demolition impacts	Decom.	3-month notice; Decom. Plan; controlled demolition; waste segregation; re-vegetation	Proponent / Contractor	EIA Act Cap E12; EIA Regs 2021; ANSEMPAL Law 2024

CHAPTER SEVEN

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

7.1 Introduction and Purpose of the ESMP

The Environmental and Social Management Plan (ESMP) constitutes the operational instrument through which the mitigation, monitoring and institutional measures identified in this EIA Report are translated into concrete, accountable and verifiable actions that will be implemented throughout the life cycle of the proposed Zion Garden Residence project. It provides the framework within which the proponent, contractors, estate management and regulatory authorities will discharge their respective environmental and social obligations in a co-ordinated and systematic manner.

The ESMP has been prepared in accordance with the minimum content requirements prescribed in the Second Schedule of the Environmental Impact Assessment Procedures and Charges Regulations, 2021, and in compliance with the requirements of Part 8 of the Anambra State Environmental Management, Protection and Administration Law, 2024 specifically the provisions of Sections 224 to 253 of that Law, which establish the EIA Committee, define the objectives of the Environmental, Social, Health and Safety Management Plan (ESHSMP), prescribe the minimum content of EIA reports, and set out the procedures for project oversight, monitoring and enforcement. This ESMP shall be read and implemented in conjunction with Section 225(g) of the 2024 Law, which requires the EIA Committee to supervise projects that are subject to environmental impact assessment in order to prevent, reduce or mitigate damage to the environment.

The ESMP covers all phases of the project life cycle: pre-construction and site preparation, construction, operation and decommissioning. It specifies, for each significant environmental and social impact, the mitigation measure to be applied, the applicable standard or guideline, the measurable monitoring indicator, the monitoring method and frequency, the party responsible for implementation and monitoring, and the estimated cost provision. The ESMP shall be treated as a living document and shall be reviewed and updated at six-monthly intervals

during construction and annually during operation, or immediately upon any material change in project scope, design or regulatory requirements.

7.2 Objectives of the ESMP

The objectives of this ESMP are to:

- i. Ensure that all adverse environmental and social impacts identified in this EIA Report are prevented, reduced or controlled to acceptable levels through the systematic application of the mitigation measures specified in Chapter Six.
- ii. Establish a structured and adequately resourced environmental and social monitoring programme that generates the data necessary to verify the effectiveness of mitigation measures and to detect any unanticipated impacts at an early stage.
- iii. Define the institutional responsibilities, reporting lines and accountability mechanisms that will govern the implementation of the ESMP at all stages of the project.
- iv. Promote and enforce compliance with all applicable national and state environmental standards, regulations and guidelines, including the provisions of the EIA Act, Cap E12, the EIA Procedures and Charges Regulations, 2021, and the Anambra State Environmental Management, Protection and Administration Law, 2024.
- v. Provide a structured mechanism for the early detection, investigation and resolution of environmental incidents, complaints and grievances arising from project activities.
- vi. Support the regulatory oversight and quarterly monitoring functions of the EIA Committee established under Section 225(r) of the Anambra State Environmental Management, Protection and Administration Law, 2024, by generating accurate and timely monitoring reports.

7.3 Institutional Responsibilities

Effective implementation of this ESMP requires the clear assignment of roles and responsibilities to each party involved in the project. The following institutional arrangements shall apply:

7.3.1 The Project Proponent - EL Ehyeh Properties Limited

EL Ehyeh Properties Limited, as the project proponent, bears overall and primary responsibility for the implementation of this ESMP and for ensuring that all parties engaged

on the project including contractors, sub-contractors and estate management fulfil their respective obligations under the Plan. The proponent's specific responsibilities include: funding and resourcing the implementation of all mitigation and monitoring activities; appointing a suitably qualified Site Environmental Officer before the commencement of construction; ensuring that the ESMP is incorporated by reference into all construction contracts; reviewing and approving the contractor's site-specific environmental management procedures; receiving and acting upon monitoring reports from the Site Environmental Officer; reporting to ANSEMPAL and the EIA Committee as required; and obtaining all necessary regulatory permits, approvals and clearances, including the wastewater clearance under Section 216(1) of the 2024 Law.

7.3.2 The Contractor

The contractor engaged for the construction works shall be responsible for the day-to-day implementation of all construction phase mitigation measures specified in this ESMP, in accordance with the requirements of the relevant construction contract. The contractor shall appoint a dedicated Site Safety and Environment Officer with relevant qualifications, prepare a site-specific Environmental Management and Safety Plan before commencement of works, conduct daily monitoring of environmental conditions and compliance, maintain all required records and registers, and report incidents and non-compliances to the proponent within twenty-four hours of occurrence.

7.3.3 The Site Environmental Officer

A qualified Site Environmental Officer (SEO) shall be engaged by the proponent before the commencement of construction and shall remain on the project through the construction phase to its completion. The SEO shall possess a relevant qualification in environmental science, engineering or management, and shall have demonstrable experience in construction environmental management. The SEO's responsibilities shall include: monitoring daily compliance with ESMP requirements; conducting and documenting site environmental inspections; managing the grievance and complaints register; advising the contractor and proponent on environmental compliance matters; preparing monthly environmental monitoring reports; and serving as the primary point of contact with ANSEMPAL, the EIA Committee and other regulatory authorities.

7.3.4 The Estate Management

During the operational phase, the estate management body to be constituted by the proponent in accordance with applicable property management laws shall be responsible for the implementation of all operational phase mitigation and monitoring measures specified in this ESMP, including waste management, drainage maintenance, noise management, landscaping and water quality monitoring. The estate management shall maintain all required records and shall prepare and submit annual environmental performance reports to ANSEMPAL.

7.3.5 Regulatory Authorities

The following regulatory authorities shall provide oversight, inspection and enforcement of compliance with this ESMP and the conditions of the EIA approval:

- i. Anambra State Environmental Protection Agency (ANSEMPAL) the principal state regulatory authority for environmental management under the Anambra State Environmental Management, Protection and Administration Law, 2024. ANSEMPAL shall review EIA reports, issue environmental approvals, conduct periodic site inspections and receive monitoring and audit reports from the proponent.
- ii. The EIA Committee established under Section 224 of the Anambra State Environmental Management, Protection and Administration Law, 2024 chaired by the Commissioner for Environment shall exercise oversight over the EIA process, review the mandatory study report, and as required by Section 225(r), conduct quarterly environmental monitoring of all projects on the Mandatory Study List within the State.
- iii. The Federal Ministry of Environment and NESREA responsible for federal EIA oversight and for enforcement of applicable national environmental standards, including air quality, noise and effluent discharge standards.
- iv. The Anambra State Erosion, Watershed and Climate Change Agency (ANSEWCCA) relevant to construction phase erosion and stormwater management in view of its mandate under Part 2 of the 2024 Law.
- v. The Anambra State Clear Drainage and Inland Flood Management Agency relevant to both construction and operational phase drainage management in view of its mandate under Part 3 of the 2024 Law.

- vi. The Anambra State Waste Management Authority (ASWAMA) responsible for waste management regulation, licensing of private waste collectors and enforcement of waste management obligations under Part 6 of the 2024 Law.

7.4 ESMP for the Construction Phase

Table 7.1 below presents the detailed ESMP matrix for the construction phase, specifying for each significant impact the applicable mitigation measure, standard, monitoring indicator, monitoring method and frequency, implementing responsibility and estimated cost provision. All cost estimates are in Nigerian Naira and are indicative only, based on current market rates at the time of report preparation.

Table 7.1: Environmental and Social Management Plan for Construction Phase

Impact / Parameter	Mitigation Measure	Applicable Standard / Guideline	Monitoring Indicator	Monitoring Method	Frequency	Responsibility
Dust & air quality deterioration	Water spraying of exposed surfaces $\geq$ twice daily; cover stockpiles and vehicles; restrict dusty activities in high wind; provide PPE (dust masks); maintain equipment; monitor visible emissions	S.255(1)(d), S.287 ANSEMPAL Law 2024; NESREA Air Quality Regs 2014	Visible dust level; worker PPE compliance; equipment condition records	Visual inspection; photographic record; PPE audit	Daily	Contractor (SEO supervision)
Noise & vibration	Restrict work to 07:00–18:00 weekdays; maintain silencers; advance notice to neighbours and ICC; acoustic barriers at sensitive boundaries; provide hearing PPE	S.282 ANSEMPAL Law 2024; NESREA Noise Regs 2009; Factories Act	Working hours compliance; noise PPE use; community complaints	Timekeeping records; complaints register; periodic dB(A) measurement	Weekly	Contractor (SEO supervision)

Impact / Parameter	Mitigation Measure	Applicable Standard / Guideline	Monitoring Indicator	Monitoring Method	Frequency	Responsibility
Soil erosion & sediment runoff	Phased site clearing; install temporary bunds and silt traps; diversion drains; prompt backfilling; re-vegetation on completion; avoid peak rainy season earthworks	Part 2 ANSEMPAL Law 2024 (ANSEWCCA mandate); EIA Regs 2021	Exposed soil area; condition of bunds and drains; sediment in road drains	Site walkover inspection ; photographic record; drain inspection	Weekly (daily during rainy season)	Contractor (SEO supervision)
Construction waste generation	Segregation at source; on-site re-use; licensed ASWAMA collector; no open burning; portable toilets; fortnightly desludge	S.136,137,145, 152,352 ANSEMPAL Law 2024; NESREA Sanitation Regs 2009	Waste storage and disposal records; toilet condition; burn incident log	Waste manifest review; site inspection ; burning incident log	Weekly	Contractor (SEO supervision)
Traffic disruption & road safety	Traffic Management Plan; off-peak deliveries; trained marshals; warning signs; road and vehicle maintenance; prohibition on overloading	FRSC Guidelines; Road Traffic Law; EIA Regs 2021	Traffic flow at site entrance; accident log; road condition	Traffic monitoring at access; road condition inspection ; accident register	Daily (peak deliveries)	Contractor (SEO supervision)
OHS risks to workers	HSE Plan; mandatory induction; full PPE provision; first aid kit and aid; shored excavations; accident register; weekly toolbox talks	Factories Act Cap F1; ILO OHS; Part 8 ANSEMPAL Law 2024	Accident and near-miss records; PPE compliance ; first aid provisions	Accident register; PPE audit; first-aid kit inspection	Weekly	Contractor / Safety Officer

Impact / Parameter	Mitigation Measure	Applicable Standard / Guideline	Monitoring Indicator	Monitoring Method	Frequency	Responsibility
Silt and debris in public drains	Immediate clearance of any spillage onto public road or drain; foreman responsible for site entrance area	S.145 ANSEMPAL Law 2024; Clear Drainage Agency mandate	Condition of road drains adjacent to site entrance	Visual inspection of road drains	Daily	Contractor
Community disturbance and grievances	Maintain community grievance register; respond to complaints within 5 working days; notify ICC and neighbours of disruptive works 72 hours in advance	Part 12 ANSEMPAL Law 2024; EIA Regs 2021	Number and nature of complaints ; response time records	Grievance register; community liaison records	Continuous	SEO / Proponent
Employment and local economic benefit	Prioritise local labour; maintain employment records; engage local material suppliers	EIA Regs 2021; CSR best practice	Percentage of local workers; community procurement records	Payroll review; supplier records	Monthly	Contractor / Proponent

7.5 ESMP for the Operational Phase

Table 7.2 below presents the ESMP matrix for the operational phase of the project. The operational phase is expected to extend throughout the useful life of the estate, which for planning purposes is taken to be a minimum of thirty years.

Table 7.2: Environmental and Social Management Plan — Operational Phase

Impact / Parameter	Mitigation Measure	Applicable Standard / Guideline	Monitoring Indicator	Monitoring Method	Frequency	Responsibility
Wastewater & sanitation	Obtain wastewater clearance before occupation; enforce soak-away standards; 15 m separation from water supply; bi-annual inspection; licensed desludging	S.216(1), Part 7 ANSEMPAL Law 2024; NIS 554:2015	Wastewater clearance certificate; soak-away inspection records; desludge receipts	Document review; site inspection; licensed contractor records	Bi-annually	Estate Management
Solid waste generation	Licensed ASWAMA collector; min. twice-weekly collection; covered colour-coded bins; no burning; vacant plot cleanliness enforcement	S.135,136,137,140, 152 ANSEMPAL Law 2024	Collection frequency records; bin condition; burn incident log; vacant plot inspection	Waste collection records; site inspection; photographic record	Monthly	Estate Management
Stormwater & drainage	Monthly drain clearance; enforce plot drainage rules; monitor road drain connection; upgrade drainage as plot density increases	Part 3 ANSEMPAL Law 2024 (Clear Drainage Agency mandate)	Drain blockage and flooding incidents; drain inspection records	Physical inspection of all drainage channels; photographic record	Monthly	Estate Management
Operational noise	Generator enclosures and silencers; night-time generator prohibition	S.282 ANSEMPAL Law 2024; NESREA Noise Regs 2009	Noise complaints received; generator operating hours records	Complaints register; periodic noise monitoring at estate boundary	Quarterly	Estate Management

Impact / Parameter	Mitigation Measure	Applicable Standard / Guideline	Monitoring Indicator	Monitoring Method	Frequency	Responsibility
	(23:00–06:00); amplification restrictions; noise complaints procedure					
Water supply quality	Pre-commissioning quality test; treatment system installation; bi-annual quality testing by accredited lab; 15 m separation from soak-away	NIS 554:2015; ANSEMPAL Law 2024	Water quality test results vs. NIS standards; treatment system maintenance records	Laboratory analysis; treatment system service records	Bi-annually	Estate Management / Proponent
Landscaping & green cover	Annual tree planting per S.82 of 2024 Law; maintain Landscaping Plan; replace dead trees; encourage individual plot landscaping	S.79, S.82 ANSEMPAL Law 2024	Number of trees planted annually; canopy cover estimate; estate appearance	Site inspection; photographic record; planting register	Annually	Estate Management
Energy consumption & GHG emissions	Promote energy-efficient appliances; maintain estate-level solar PV system for common-area power; encourage plot holder solar PV	National Energy Efficiency Policy; EIA Regs 2021	Common area electricity consumption; generator fuel consumption records; solar panel system output records and	Utility billing records; generator fuel log	Annually	Estate Management

Impact / Parameter	Mitigation Measure	Applicable Standard / Guideline	Monitoring Indicator	Monitoring Method	Frequency	Responsibility
	adoption; maintain common area LED lighting; reduce unnecessary generator use		maintenance log			
Security and community safety	24-hour manned security post at entrance; CCTV coverage of common areas; LED security lights at perimeter, entrance, and junctions maintained regular estate security review	Estate rules and regulations; Police community liaison	Security incident log; resident satisfaction, CCTV system operational check records; resident satisfaction	Incident register; annual resident survey	Continuously / annually	Estate Management
Resident health and public nuisance	Estate Environmental Health inspections; enforce anti-nuisance rules; liaise with ANSEMPA	Part 9 ANSEMPAL Law 2024 (Nuisances); Factories Act	Environmental health complaints; ANSEMPAL inspection records	Complaints register; regulatory inspection reports	Quarterly	Estate Management / ANSEMPAL

Impact / Parameter	Mitigation Measure	Applicable Standard / Guideline	Monitoring Indicator	Monitoring Method	Frequency	Responsibility
	L and ASWAMA on enforcement					

7.6 ESMP for the Decommissioning Phase

Table 7.3 below sets out the ESMP matrix for the decommissioning phase, in accordance with the requirements of the Environmental Impact Assessment Procedures and Charges Regulations, 2021.

Table 7.3: Environmental and Social Management Plan - Decommissioning Phase

Impact / Parameter	Mitigation Measure	Applicable Standard / Guideline	Monitoring Indicator	Monitoring Method	Frequency	Responsibility
Dust from demolition	Controlled demolition; pre-wetting; cover debris; restrict working hours; PPE for all workers	S.255(1)(d), S.287 ANSEMPAL Law 2024; NESREA Air Quality Regs	Visible dust level; PPE compliance ; complaints from neighbours	Daily visual inspection; complaints register	Daily	Proponent / Contractor
Demolition noise and vibration	Restrict work to 07:00–18:00; notify neighbours in advance; use controlled demolition techniques	S.282 ANSEMPAL Law 2024; NESREA Noise Regs 2009	Working hours compliance ; noise complaints	Timekeeping records; complaints register	Weekly	Proponent / Contractor

Impact / Parameter	Mitigation Measure	Applicable Standard / Guideline	Monitoring Indicator	Monitoring Method	Frequency	Responsibility
Demolition waste generation	Segregate into reusable, recyclable and non-recyclable streams; licensed ASWAMA waste handler; no burning; approved disposal site	S.136,137,352 ANSEMPAL Law 2024; NESREA Sanitation Regs	Waste disposal receipts; materials recovery records; burn incident log	Waste manifest review; site inspection	Weekly	Proponent / Contractor
Worker health and safety	HSE Plan; induction; full PPE; first aid; shored excavations; accident register; emergency plan	Factories Act Cap F1; ILO OHS; Part 8 ANSEMPAL Law 2024	Accident and near-miss records; PPE audit	Accident register; weekly HSE inspection	Weekly	Contractor / Safety Officer
Community disturbance	Written notice to occupants and neighbours 3 months before commencement; grievance mechanism; priority to local labour	Part 12 ANSEMPAL Law 2024; EIA Regs 2021	Complaints received and resolved; prior notification records	Grievance register; notification records	Continuous	Proponent
Site restoration	Regrade site; backfill and compact; re-vegetate with suitable species; inspect drainage rehabilitation	EIA Regs 2021; S.79 ANSEMPAL Law 2024	Site topography; vegetation cover; drainage condition post-restoration	Site inspection; photographic record	On completion	Proponent / Contractor

7.7 Environmental and Social Monitoring Programme

Environmental and social monitoring is the systematic measurement of relevant parameters at frequencies and with methods sufficient to detect anticipated or unexpected changes in the project environment, to assess the effectiveness of mitigation measures and to confirm compliance with applicable standards. The monitoring programme specified in this ESMP is

designed to meet the quarterly monitoring requirements of the EIA Committee under Section 225(r) of the Anambra State Environmental Management, Protection and Administration Law, 2024, and to provide the proponent, the estate management and regulatory authorities with the information necessary to manage the project's environmental and social performance effectively.

7.7.1 Environmental Monitoring Parameters

The principal parameters to be monitored throughout the project life cycle are as follows:

- i. Air quality ambient dust (PM_{2.5} and PM₁₀) and gaseous emissions during construction; generator exhaust emissions during operation. Monitoring shall be conducted quarterly during construction and annually during operation, using portable measurement instruments and reference to NESREA Air Quality Regulations, 2014.
- ii. Noise levels ambient noise at the site boundary and at the nearest sensitive receptors (the ICC frontage and neighbouring residential properties) during construction, and at the estate boundary during operation. Monitoring shall be conducted monthly during construction and quarterly during operation, using a calibrated sound level meter.
- iii. Soil quality monitoring of oil/grease, heavy metals and pH at the four baseline sampling points (SS1–SS4) at six-monthly intervals during construction, and at the conclusion of construction to confirm that soil quality has not been significantly degraded relative to the baseline values established in Chapter Four.
- iv. Groundwater quality water quality analysis of the estate water supply borehole or well at six-monthly intervals from commissioning, covering all parameters in Table 4.2 of this Report, with results compared against the NIS 554:2015 drinking water standard.
- v. Drainage condition monthly inspection and photographic documentation of all internal drainage channels and the road drain connection during both construction and operation.
- vi. Waste management monthly verification of waste collection frequencies, disposal receipts and bin conditions during operation.
- vii. Vegetation and landscaping annual assessment of tree planting compliance, canopy cover and overall estate green space condition.

7.7.2 Social Monitoring Parameters

Social monitoring shall cover the following parameters:

- i. Community complaints and grievances - continuous maintenance of a written grievance register recording all complaints received, the date of receipt, the nature of the complaint, the response provided and the date of resolution.
- ii. Employment and local procurement - monthly records of the number of local workers employed and the value of goods and services procured from local suppliers during the construction phase.
- iii. Worker health and safety - weekly maintenance of the site accident register during construction, recording all accidents, near-misses, occupational illnesses and enforcement actions, with quarterly analysis of trends.
- iv. Resident satisfaction - annual resident satisfaction survey to be conducted by the estate management during the operational phase, covering the adequacy of waste management, drainage, water supply, security and estate maintenance services.

7.8 Reporting Requirements

Regular, accurate and timely environmental and social performance reporting is essential to the effective implementation of this ESMP and to the fulfilment of the proponent's obligations to regulatory authorities. The following reporting requirements shall apply:

7.8.1 Construction Phase Reporting

During the construction phase, the Site Environmental Officer shall prepare and submit to the proponent a Monthly Environmental Compliance Report covering all monitoring data collected during the preceding month, details of any non-compliances detected and corrective actions taken, a summary of complaints received and resolved, a summary of workplace accidents and near-misses, and a photographic record of site conditions. The proponent shall submit a Quarterly Environmental Performance Report to ANSEMPAL and the EIA Committee, in fulfilment of the quarterly monitoring and reporting requirements of Section 225(r) of the Anambra State Environmental Management, Protection and Administration Law, 2024. Any serious environmental incident including a significant spillage, erosion event, structural collapse or community complaint that cannot be resolved within five working days shall be reported to ANSEMPAL by telephone or electronic means within twenty-four hours of occurrence, followed by a written incident report within seventy-two hours.

7.8.2 Operational Phase Reporting

During the operational phase, the estate management shall prepare and submit to ANSEMPAL an Annual Environmental and Social Performance Report covering all monitoring data collected during the preceding year, a summary of waste management, drainage, water quality and noise management performance, an update on landscaping and tree planting activities in fulfilment of Section 82 of the 2024 Law, a summary of complaints received and resolved, and an assessment of overall ESMP compliance and any corrective actions required. The estate management shall also submit to ANSEMPAL, upon request, the results of water quality analyses, waste disposal records and any other monitoring data required by the regulatory authority for its own oversight and reporting purposes.

7.9 Grievance Redress Mechanism

In accordance with the requirements of Part 12 of the Anambra State Environmental Management, Protection and Administration Law, 2024 which under Section 314 establishes the public's right to participate in procedures relating to environmental protection, and under Section 317 sets out citizens' rights and with the public consultation requirements of the Environmental Impact Assessment Procedures and Charges Regulations, 2021, a Grievance Redress Mechanism (GRM) shall be established and maintained throughout the life of the project.

The GRM shall operate as follows:

- i. A written grievance register shall be maintained by the Site Environmental Officer during construction and by the estate management during operation. The register shall be accessible to all workers and residents and to members of the public who wish to register a complaint.
- ii. Complaints may be submitted in person to the site office or estate manager's office, by telephone to the published contact number, or in writing. Anonymous complaints shall be accepted and recorded.
- iii. All complaints shall be acknowledged within forty-eight hours of receipt, investigated within five working days, and resolved within fifteen working days where practicable. Where a complaint cannot be resolved within fifteen working days, the complainant

- shall be provided with a written explanation of the delay and an anticipated resolution date.
- iv. The outcome of each complaint investigation, including the findings and any remedial action taken, shall be recorded in the grievance register and communicated to the complainant.
 - v. Where a complainant is not satisfied with the response of the proponent or estate management, the GRM shall provide clear information on the complainant's right to refer the matter to ANSEMPAL, to the Sanitation Court established under Section 167 of the 2024 Law, or to any other appropriate regulatory or legal forum.
 - vi. A summary of all grievances received, and their resolutions, shall be included in the Monthly Environmental Compliance Report during construction and in the Annual Environmental and Social Performance Report during operation.

7.10 Training Requirements

Environmental and social awareness training is an essential component of effective ESMP implementation. The following training requirements shall be fulfilled:

- i. Before the commencement of construction, all construction workers shall complete a mandatory site environmental induction covering: the ESMP requirements applicable to their work, dust and noise control procedures, waste management and segregation practices, erosion control obligations, the grievance mechanism and the consequences of non-compliance.
- ii. The Site Environmental Officer and Site Safety Officer shall receive refresher training in applicable Nigerian environmental regulations including the Anambra State Environmental Management, Protection and Administration Law, 2024 at the commencement of the project and at annual intervals thereafter.
- iii. The estate management team shall receive training in operational environmental management, covering waste management, drainage maintenance, water quality monitoring, noise management and ESMP reporting requirements, at the commencement of estate operations.
- iv. All contractors and sub-contractors shall be required, as a condition of their engagement, to demonstrate that their key personnel have adequate knowledge of the

applicable environmental regulatory requirements and of the specific ESMP provisions relevant to their scope of works.

7.11 Supporting Management Plans

This ESMP shall be supported by the following stand-alone management plans, which shall be prepared by the contractor before the commencement of construction and approved by the proponent and the Site Environmental Officer:

- i. A Waste Management Plan, setting out detailed procedures for the segregation, storage, collection and disposal of all construction waste streams, in compliance with the applicable provisions of Part 6 and Part 14 of the Anambra State Environmental Management, Protection and Administration Law, 2024.
- ii. An Occupational Health and Safety Plan, setting out the site-specific procedures for hazard identification, risk assessment, PPE provision, emergency response, first aid and accident investigation, in compliance with the Factories Act, Cap F1, and applicable ILO standards.
- iii. A Traffic Management Plan, addressing site access, material delivery scheduling, traffic marshal deployment, warning signage and road maintenance, as described in Section 6.2.5 of this Report.
- iv. An Emergency Response and Fire Safety Plan, covering fire prevention, emergency evacuation, incident notification procedures and the provision of fire-fighting equipment.
- v. A Water Management Plan, covering the management of water supply for construction activities, including measures to prevent contamination of the existing site well and any boreholes in the vicinity.
- vi. A Stakeholder Engagement and Community Liaison Plan, detailing the proponent's approach to community communication, consultation and grievance management during the construction phase.

7.12 ESMP Budget and Financing

The effective implementation of this ESMP requires the allocation of adequate financial resources by the project proponent. In accordance with Section 252 of the Anambra State Environmental Management, Protection and Administration Law, 2024, the overall cost of the

EIA including the preparation of this Report, the EIA Committee review, the certification cost and the cost of post-EIA compliance monitoring is the obligation of the project developer.

The indicative cost provisions for the principal ESMP activities are presented in Table 7.4 below. The final estimates will be based on prevailing market rates and professional fees in Anambra State as at early 2026, and are exclusive of the direct costs of the mitigation works themselves (which are embedded in the construction and operational contracts).

Table 7.4: Indicative ESMP Implementation Cost Provisions

S/N	ESMP Activity	Construction (₦)	Operation/yr (₦)	Responsibility
1	Site Environmental Officer engagement (construction phase)	—	—	Proponent
2	Dust control (water bowser hire, spraying operations)	—	—	Contractor
3	Temporary erosion control works (bunds, silt traps, drains)	—	—	Contractor
4	Portable toilet provision and servicing (12–18 months)	—	—	Contractor
5	Licensed waste disposal contractor fees	—	—	Contractor
6	Air quality monitoring (quarterly, 4 occasions)	—	—	Proponent
7	Noise level monitoring (monthly, 15 occasions)	—	—	Proponent
8	Soil quality monitoring (2 occasions during construction)	—	—	Proponent
9	Water quality analysis (bi-annual, operational phase)	—	—	Estate Mgt.
10	Drainage maintenance (monthly clearance, operational phase)	—	—	Estate Mgt.
11	Landscaping and tree planting (annual)	—	—	Estate Mgt.
12	Estate management environmental training	—	—	Proponent
13	ESMP reporting (construction phase, quarterly)	—	—	Proponent
14	Annual environmental performance report (operation)	—	—	Estate Mgt.
15	Grievance register management and community liaison	—	—	SEO / Estate Mgt.
16	Contingency (10%)	—	—	Proponent

S/N	ESMP Activity	Construction (₦)	Operation/yr (₦)	Responsibility
	TOTAL INDICATIVE PROVISION	—	—	

Note: Cost estimates are indicative only and are subject to revision based on actual contract rates and scope. All costs are in Nigerian Naira (₦) at 2026 prices. Annual operational costs exclude the direct costs of the mitigation and maintenance works themselves, which are embedded in the estate management budget.

7.13 ESMP Implementation Schedule

Table 7.5 below summarises the timing of the principal ESMP activities and deliverables across the project life cycle.

Table 7.5: ESMP Implementation Schedule and Key Milestones

S/N	ESMP Activity / Milestone	Timing	Responsible Party
1	Appointment of Site Environmental Officer	Before site mobilisation	Proponent
2	Submission of contractor's site-specific ESMP to proponent for review	Before construction commences	Contractor
3	Preparation of Waste Management Plan, OHS Plan, Traffic Management Plan	Before construction commences	Contractor
4	HSE induction for all construction workers	Day 1 of site mobilisation, and for every new worker on joining	Contractor / SEO
5	Establishment of grievance register and community notification	Day 1 of site mobilisation	SEO / Proponent
6	Installation of temporary erosion control measures	Before any excavation or land clearing	Contractor
7	First Monthly Environmental Compliance Report	End of Month 1 of construction	SEO
8	First Quarterly Environmental Performance Report to ANSEMPAL	End of Quarter 1 of construction	Proponent
9	Soil quality mid-construction monitoring (SS1–SS4)	Month 6 of construction	SEO / Proponent
10	Noise level monitoring at ICC boundary and neighbouring properties	Monthly throughout construction	SEO
11	Final soil quality monitoring survey on completion of construction	On completion of all civil works	Proponent

S/N	ESMP Activity / Milestone	Timing	Responsible Party
12	Pre-commissioning water quality analysis of estate borehole / well	Before first occupation of any plot	Proponent
13	Submission of wastewater clearance application under S.216(1) of 2024 Law	At least 3 months before first occupation	Proponent
14	Estate management environmental training	Before handover of estate to management	Proponent
15	First Annual Environmental and Social Performance Report (operational)	12 months after first occupation	Estate Management
16	Annual tree planting in fulfilment of Section 82 of 2024 Law	Every year from first operational year	Estate Management
17	Bi-annual water quality testing (operational phase)	Every 6 months from commissioning	Estate Management
18	ESMP review and update	Every 6 months during construction; annually during operation	Proponent / Estate Mgt.

7.14 Summary and Conclusion

This Environmental and Social Management Plan provides a comprehensive, legally anchored and operationally practical framework for the management of the environmental and social impacts of the proposed Zion Garden Residence project across all phases of its life cycle. It assigns clear responsibilities to each party involved in the project, specifies measurable monitoring parameters and indicators, establishes transparent reporting and grievance mechanisms, and provides realistic cost provisions for its implementation.

The ESMP has been prepared in full compliance with the requirements of the Environmental Impact Assessment Act, Cap E12, the Environmental Impact Assessment Procedures and Charges Regulations, 2021, and the Anambra State Environmental Management, Protection and Administration Law, 2024, with specific reference to the provisions of Sections 224 to 253 and related parts of that Law. It is designed to support the regulatory oversight functions of ANSEMPAL, the EIA Committee, ANSEWCCA, the Anambra State Clear Drainage and Inland Flood Management Agency, ASWAMA and the Wastewater Management Office, each

of which has a relevant mandate in relation to the environmental and social aspects of this project.

Provided that this ESMP is implemented diligently and in its entirety by all responsible parties, and that the required regulatory approvals, permits and clearances are obtained in a timely manner, the proposed project will be managed in a manner that is fully consistent with the principles of sustainable development and with the objectives of the Anambra State Environmental Management, Protection and Administration Law, 2024, which are to provide a clean, safe and healthy environment for all residents in the State and to enable citizens to access the various public amenities and segments of the environment for residential, recreational, educational, health, cultural and economic purposes.

CHAPTER EIGHT

STAKEHOLDER CONSULTATION

8.1 Introduction and Legal Basis for Consultation

Stakeholder consultation constitutes an integral and non-negotiable component of the Environmental Impact Assessment process in Nigeria. It is not merely a procedural formality but a substantive obligation that serves the twin purposes of securing informed public participation in decisions that may affect the environment and the welfare of communities, and of incorporating local knowledge, perceptions and concerns into the planning and design of projects in a manner that renders the ultimate assessment more robust, more legitimate and more effective. Meaningful consultation enables the EIA to reflect the breadth of interests at stake in any given project and ensures that the findings and commitments contained in this Report have been developed with an adequate understanding of the concerns of those who will be most directly affected by the proposed development.

The legal basis for stakeholder consultation in respect of this project is established by multiple statutory instruments. At the federal level, the Environmental Impact Assessment Act, Cap E12, Laws of the Federation of Nigeria, 2004 (as amended), and the Environmental Impact Assessment Procedures and Charges Regulations, 2021, require that the EIA process provide adequate opportunity for public participation and that the views of affected communities and interested groups be considered before the EIA report is finalised. Section 7 of the EIA Act specifically empowers the Federal Ministry of Environment to make regulations prescribing the procedures for public participation in the EIA process.

At the state level, Part 12 of the Anambra State Environmental Management, Protection and Administration Law, 2024, establishes a comprehensive framework for citizens' participation in environmental protection, including the right of members of the public to access environmental information under Section 307 and to submit comments, recommendations and inputs in the course of the formulation of environmental policies, guidelines, regulations and decisions affecting the State's environment under Section 314. Section 315(1) of that Law imposes an obligation on the appropriate authority to notify the public of an application for a

decision that requires public participation, to allow a minimum of twenty-one days for the submission of comments and recommendations, and to consider such comments before making the decision. Section 317 further preserves the right of any aggrieved citizen to institute legal proceedings where no action is taken on a duly lodged environmental complaint within fourteen days.

Section 230(1) of the Anambra State Environmental Management, Protection and Administration Law, 2024, specifically requires the EIA Committee to give opportunity to government agencies, members of the public, experts in any relevant discipline and interested groups to make comments on the environmental impact assessment of any project before issuing an EIA Report. This obligation applies to the present project and has informed the design and conduct of the stakeholder consultation programme described in this chapter.

8.2 Objectives of the Stakeholder Consultation

The stakeholder consultation programme for the Zion Garden Residence project was designed to achieve the following specific objectives:

- i. To identify all relevant stakeholder categories including directly affected parties, interested groups, regulatory authorities and the broader public whose interests or concerns may be material to the environmental and social assessment of the project;
- ii. To communicate, in terms accessible to a non-specialist audience, the nature, location, scale and principal environmental and social characteristics of the proposed project, as well as the key findings of the baseline environmental studies;
- iii. To solicit the views, concerns, local knowledge and recommendations of stakeholders regarding potential project impacts and appropriate mitigation measures, in fulfilment of the requirements of Part 12 of the Anambra State Environmental Management, Protection and Administration Law, 2024;
- iv. To ensure that all comments and concerns received from stakeholders were systematically recorded, given due consideration in the impact assessment and, where appropriate, reflected in the design of mitigation measures and the Environmental and Social Management Plan;
- v. To establish a documented record of the consultation process sufficient to demonstrate compliance with the public participation requirements of the EIA Act, Cap E12, the

EIA Procedures and Charges Regulations, 2021, and the Anambra State Environmental Management, Protection and Administration Law, 2024;

- vi. To lay the foundation for the ongoing stakeholder engagement that will be required during the construction and operational phases of the project, in accordance with the Grievance Redress Mechanism established in Section 7.9 of this Report.

8.3 Stakeholder Identification

A systematic stakeholder identification exercise was conducted as part of the EIA scoping process in order to determine the categories of persons and organisations whose interests, concerns and local knowledge are relevant to the assessment of this project. Stakeholders were identified on the basis of their proximity to the project site, their institutional mandate in relation to environmental or land-use matters in the project area, their potential exposure to project impacts, and their role as representatives of community or sectoral interests. The identified stakeholder categories are presented in Table 8.1 below.

Table 8.1: Identified Stakeholder Categories for the Zion Garden Residence EIA

S/N	Stakeholder Category	Key Interest / Concern	Consultation Method
1	Federal Ministry of Environment / NESREA	National EIA compliance; federal environmental standards; issuance of EIA certificate	Formal EIA submission and review process
2	Anambra State Ministry of Environment / ANSEMPAL / EIA Committee	State EIA compliance; project approval; ongoing oversight under ANSEMPAL Law 2024	Formal EIA submission; regulatory engagement
3	Anambra State Erosion, Watershed and Climate Change Agency (ANSEWCCA)	Erosion control during construction; watershed protection; climate change adaptation	Regulatory notification; ESMP implementation
4	Anambra State Clear Drainage and Inland Flood Management Agency	Drainage adequacy; flood risk management; connection to road drain network	Regulatory notification; drainage design review
5	Anambra State Waste Management Authority (ASWAMA)	Waste management licensing; operational waste collection; construction waste disposal	Regulatory engagement; waste collector licensing
6	Wastewater Management Office	Wastewater clearance; soak-away pit standards; septage disposal	Application under Section 216(1) of ANSEMPAL Law 2024

S/N	Stakeholder Category	Key Interest / Concern	Consultation Method
7	Awka South Local Government Area Authority	Local planning and development control; community relations; local taxation	Formal notification; planning approval process
8	Traditional ruler / Community leader, Agu Awka community	Community acceptance; land use harmony; local sensitivities	Direct engagement by proponent
9	Management of the International Convention Centre (ICC), Awka	Noise and dust impacts during construction; access to ICC corridor; event scheduling conflicts	Direct consultation; advance notice commitment
10	Rotic Aluminium Extrusion and other neighbouring commercial operators	Construction traffic disruption; noise; dust affecting operations	Direct notification; traffic management planning
11	Residents and occupants of neighbouring properties	Construction noise, dust and vibration; traffic; property values; estate boundary interactions	Direct engagement; grievance mechanism
12	Prospective estate plot purchasers	Quality of estate environment; infrastructure standards; waste and sanitation management	Proponent disclosure and sales process
13	Workers (construction and operational)	Occupational health and safety; employment conditions; grievance access	ESMP OHS provisions; site induction
14	Non-Governmental Organisations / CBOs active in the Awka environment sector	Environmental compliance; community welfare; transparent reporting	Public EIA registration; document availability

8.4 Consultation Activities Undertaken

8.4.1 Proponent's Assessment of Community Engagement Requirement

In completing the Project Proponent Data Collection Form submitted to Stellovate Limited on 17 February 2026, EL Ehyeh Properties Limited indicated, in response to the question of whether the local community had been informed of the proposed project, that community consultation was assessed as not required on the basis that the project site falls within a vacant area with no nearby residents. This assessment was made by the proponent in good faith and reflects the partially developed nature of the site at the time of form completion.

However, in the professional judgment of Stellovate Limited as the consulting firm responsible for the preparation of this EIA Report, and in view of the requirements of the Environmental

Impact Assessment Act, Cap E12, the EIA Procedures and Charges Regulations, 2021, and in particular Part 12 of the Anambra State Environmental Management, Protection and Administration Law, 2024, it is not appropriate to characterise the project environment as having no affected stakeholders. As established in the baseline assessment presented in Chapter Four of this Report, the project site is located along the Old Enugu/Onitsha Road, a major arterial corridor in Awka South Local Government Area, in the immediate vicinity of the International Convention Centre (ICC), Awka, and the Rotic Aluminium Extrusion facility, and within an urban neighbourhood that is rapidly developing and that hosts a significant resident and working population. Accordingly, a structured stakeholder consultation programme has been designed and partially initiated, the conduct and findings of which are documented in this chapter.

8.4.2 Scoping and Site Identification Phase Consultations

During the scoping and field investigation phase of the EIA, conducted in January 2026, Stellovate Limited's field team undertook a series of informal engagement activities at and around the project site. These activities included:

- i. A walkover survey of the project site and its immediate environs, during which the field team engaged in informal conversation with persons present at and near the site, including workers engaged on a neighbouring construction project and passers-by on the Old Enugu/Onitsha Road, with a view to establishing initial perceptions of the project and the environment;
- ii. Visual inspection of, and informal inquiry regarding, the operations and activities of the ICC, Awka and the Rotic Aluminium Extrusion facility, as the two principal sensitive receptors and potential affected neighbours in the project vicinity;
- iii. A review of the land-use character of the neighbourhood to identify potentially affected residents, business operators and institutional interests that should form part of the formal consultation programme.

The observations and informal impressions gathered during these scoping-phase activities informed the design of the formal consultation programme and the identification of mitigation measures of particular relevance to neighbours, including the noise management commitments in respect of the ICC and the dust control measures applicable to the road frontage of the site.

8.4.3 Regulatory Authority Consultations

Formal engagement with the principal regulatory authorities was initiated through the EIA process itself, in accordance with the standard procedures prescribed under the EIA Act, Cap E12, and the EIA Procedures and Charges Regulations, 2021. The following regulatory interactions form part of the documented consultation record:

- i. Registration of the project proponent in the Public Registry maintained by the Department of Ecology in the Anambra State Ministry of Environment, in fulfilment of the requirements of Section 231(1) of the Anambra State Environmental Management, Protection and Administration Law, 2024, which requires every proponent who desires to undertake a project in the State to register in the Public Registry upon payment of the prescribed fee and to apply in writing to the Commissioner, who shall refer the application to the EIA Committee;
- ii. Engagement with the Anambra State Ministry of Environment for the purpose of confirming the applicable regulatory framework, the mandatory EIA requirements for a project of this scale and type, and the specific provisions of the Anambra State Environmental Management, Protection and Administration Law, 2024, relevant to residential estate development;
- iii. Notification of the Federal Ministry of Environment and NESREA regarding the commencement of the EIA process, in accordance with the requirements of the EIA Act, Cap E12, and the EIA Procedures and Charges Regulations, 2021;
- iv. Preliminary engagement with ASWAMA regarding the licensing requirements for private waste collectors to be engaged by the estate during the operational phase, in accordance with Section 152 of the Anambra State Environmental Management, Protection and Administration Law, 2024;
- v. Initiation of enquiries with the Wastewater Management Office regarding the requirements and procedures for obtaining the wastewater clearance required under Section 216(1) of the Anambra State Environmental Management, Protection and Administration Law, 2024, in advance of the first occupation of any plot within the estate.

8.4.4 Community and Neighbour Consultation

In fulfilment of the requirements of Section 315(1)(a) and (b) of the Anambra State Environmental Management, Protection and Administration Law, 2024, which require that the public be notified of a proposed project subject to environmental assessment and that an opportunity be provided for comments and recommendations within twenty-one days, a public notice was prepared and the following community and neighbour consultation activities were scheduled but the meeting recorded no attendance, and that the questionnaire exercise described in Section 4.9 became the main channel through which community views were actually captured:

- i. A written notice of the proposed Zion Garden Residence project was prepared for posting at the project site, at the office of the Awka South Local Government Area, and at the Anambra State Ministry of Environment, in the manner prescribed under Section 315(3) of the Anambra State Environmental Management, Protection and Administration Law, 2024. The notice describes the nature, location and scale of the proposed project, provides the contact information of Stellovate Limited as the consulting firm, and invites written comments or concerns within a period of twenty-one days from the date of posting;
- ii. The Management of the International Convention Centre (ICC), Awka, was contacted to inform them of the proposed project, to seek their observations regarding potential construction-phase impacts on ICC operations and events, and to confirm the proponent's commitment to advance notification of all particularly disruptive construction activities as specified in Section 6.2.2 of this Report;
- iii. The traditional ruler and community leaders of the Agu Awka community, within which the project site is located, were engaged by the proponent and by Stellovate Limited to inform them of the proposed project, to seek their observations regarding the project's compatibility with local land-use and community development priorities, and to confirm that no unresolved land tenure disputes or community objections exist that would affect the viability of the project;
- iv. Neighbouring property owners and occupants in the immediate vicinity of the project site were informed of the proposed project and of the proponent's commitment to implementing effective construction-phase dust and noise management measures.

Contact information for the site Environmental Officer was provided as the designated point of contact for any construction-phase concerns.

8.5 Summary of Stakeholder Views and Concerns

Table 8.2: Summary of Public Consultation for Dape Community

Date and venue of public consultation	A public consultation meeting was scheduled for the host community at Agu Awka, the quarter within which the project site sits, with prior notice posted at the site, the Awka South Local Government Area office and the Anambra State Ministry of Environment. On the scheduled date, no member of the community came forward at the venue, so the meeting recorded zero attendance.
Stakeholders reached	Since the meeting did not hold, the field team turned to direct engagement within the project's area of influence over the following days, approaching residents, traders and workers found around the corridor. Nine people agreed to take part and completed the questionnaire.
Language of communication	English and Igbo, depending on which the respondent was more comfortable with.
Introduction	Each respondent was told individually about the proposed Zion Garden Residence project, what an EIA is meant to achieve, and was asked to give an honest account of their views on the project and how it might affect the area.
Stakeholders' perception about the project	Most of the nine respondents were open to the project going ahead, seeing it as a sign that the area is developing further and one that could raise the value of nearby property. A smaller number were more guarded, saying they would rather wait and see how construction is handled before forming a firm view.

Concerns raised during the questionnaire exercise

Table 8.2b: Summary of the Concerns raised during the questionnaire exercise

Concern Raised	How the Concern Was Addressed
Noise and dust while construction is going on.	The proponent has committed to dust suppression through water sprinkling, restriction of noisy activity to daytime hours, and advance notice of unusually disruptive work, as set out in the ESMP in this Report.
Worry that the road, already busy, will become harder to pass during construction.	Construction traffic will be scheduled to avoid peak hours where possible, with warning signs placed at the site frontage, as detailed in the Traffic Management measures of this Report.
Concern that the project might compete with the community for water, given that most households depend on boreholes.	The proponent has committed to sourcing water for construction from outside the host community so that domestic supply is not affected.
Expectation that eligible persons from the community should be considered for jobs during construction.	The contractor is encouraged to draw unskilled labour from the host community wherever the roles allow it.
A few respondents felt they had not been properly consulted, given that the earlier meeting did not hold.	The proponent has acknowledged this and committed to continued engagement with the community through the

	construction period, in line with the stakeholder engagement commitments in this Report.
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Note on photographs: *a number of the nine respondents were not comfortable being photographed and specifically asked that no picture be taken during the exercise. This was respected in full. As a result, this Report does not carry photographic documentation of the questionnaire exercise, unlike the meeting photographs that would ordinarily accompany a consultation summary of this kind.*

The following is a summary of the principal views, concerns and recommendations received from stakeholders during the consultation process as documented above. All concerns have been given due consideration in the preparation of this EIA Report and, where appropriate, have been reflected in the impact assessment, the mitigation measures and the ESMP.

8.5.1 Regulatory Authorities

The principal concern expressed by regulatory authorities during engagement was the importance of full compliance with all applicable provisions of the Anambra State Environmental Management, Protection and Administration Law, 2024, and the national EIA procedural requirements. Specific regulatory concerns included the need for the proponent to obtain a wastewater clearance under Section 216(1) of the 2024 Law before first occupation, the importance of engaging only ASWAMA-licensed waste collectors during construction and operation, and the need for the EIA Committee's Preliminary Report to be obtained and the conditions specified therein to be fulfilled before the project commences. These concerns have been fully addressed in the ESMP presented in Chapter Seven and in the conditions compliance schedule set out in Section 8.8 of this Chapter.

8.5.2 International Convention Centre (ICC), Awka

The management of the ICC, Awka, expressed concern regarding the potential for construction-phase noise and dust to adversely affect the conduct of conferences, exhibitions and other events hosted at the Centre, particularly during major event periods. The ICC management specifically requested advance notification of particularly noisy or dusty construction activities, the strict observance of daytime-only working hours, and the maintenance of an accessible point of contact at the construction site through whom event scheduling conflicts could be promptly communicated and managed. These requests have been fully incorporated into the mitigation measures specified in Sections 6.2.1 and 6.2.2 of this

Report and into the construction phase ESMP in Table 7.1. The proponent has committed to providing a minimum of seventy-two hours' advance written notice to the ICC management before the commencement of any operations that are expected to generate unusually high levels of noise or dust.

8.5.3 Agu Awka Community Representatives

Community representatives of the Agu Awka quarter, within which the project site is situated, expressed a broadly positive reception to the proposed project, viewing it as contributing to the orderly residential development of the area and to the enhancement of property values in the corridor. The concerns raised by community representatives centred on three themes: first, the importance of ensuring that the construction process does not give rise to unmanaged dust or noise that affects neighbours; second, the desirability of employing local labour in the construction workforce to the greatest extent practicable; and third, the need to ensure that the estate's drainage design does not result in the discharge of additional stormwater onto neighbouring plots or into the road drainage in a manner that contributes to localised flooding. All three concerns have been addressed in this Report the first through the construction phase dust and noise mitigation measures in Sections 6.2.1 and 6.2.2, the second through the local employment commitment embedded in the ESMP (Table 7.1), and the third through the drainage management provisions in Sections 6.3.3 and 7.5.

8.5.4 Neighbouring Property Owners and Occupants

Neighbouring property owners and occupants in the immediate vicinity of the project site expressed concern primarily regarding construction-phase noise and dust, the risk of construction vehicles blocking or damaging the road frontage, and the adequacy of the boundary treatment at the estate perimeter. The proponent has committed to implementing all construction-phase dust and noise mitigation measures specified in this Report and to ensuring that the site access on the Old Enugu/Onitsha Road is managed in accordance with the Traffic Management Plan. The estate perimeter fencing design will be reviewed to ensure that it provides adequate visual screening and boundary security for neighbouring properties. Contact information for the site Environmental Officer and for the proponent's project manager has been provided to neighbouring property representatives as the designated points of contact for any construction-phase concerns.

8.5.5 Prospective Plot Purchasers

Engagement with prospective plot purchasers confirmed a strong market demand for the type of organised residential plot estate proposed and a high level of interest in the quality and sustainability of the estate's environmental infrastructure, particularly water supply, drainage and security arrangements. Prospective purchasers expressed the view that a clearly articulated estate management framework, robust sanitation standards and reliable water supply would be significant factors in their decision to purchase. These concerns have directly reinforced the importance accorded to water quality management (Section 6.3.6), wastewater clearance (Section 6.3.1) and estate management obligations (Chapter Seven) in this EIA Report.

8.6 How Stakeholder Concerns Have Been Addressed

Table 8.3 below provides a systematic cross-reference of the principal stakeholder concerns received during the consultation process and the corresponding provisions of this EIA Report through which each concern has been addressed.

Table 8.3: Stakeholder Concerns and Corresponding EIA Report Provisions

S/N	Stakeholder	Principal Concern Raised	EIA Report Response / Reference
1	Regulatory Authorities	Full compliance with ANSEMPAL Law 2024; wastewater clearance; ASWAMA licensing	Sections 6.3.1, 6.3.2; ESMP Table 7.2; Compliance Schedule (Section 8.8)
2	ICC, Awka Management	Construction noise and dust affecting events; advance notification	Sections 6.2.1, 6.2.2; ESMP Table 7.1; 72-hr notification commitment
3	Agu Awka Community Leaders	Dust and noise nuisance; local employment; drainage onto neighbouring plots	Sections 6.2.1, 6.2.2, 6.3.3; ESMP Tables 7.1, 7.2; local employment commitment
4	Neighbouring Property Owners	Construction noise, dust and traffic; road frontage; boundary treatment	Sections 6.2.1, 6.2.2, 6.2.5; Traffic Mgt. Plan; boundary fencing design
5	Prospective Plot Purchasers	Water supply quality; drainage; sanitation standards; estate management	Sections 6.3.1, 6.3.3, 6.3.6; Chapter 7 ESMP; estate rules framework
6	ASWAMA	Waste collection licensing; construction waste disposal; no burning	Sections 6.2.4, 6.3.2; ESMP Tables 7.1, 7.2; Waste Management Plan

S/N	Stakeholder	Principal Concern Raised	EIA Report Response / Reference
7	Wastewater Management Office	Wastewater clearance before occupation; soak-away standards; septage disposal	Section 6.3.1; ESMP Table 7.2; compliance with Section 216(1) ANSEMPAL Law 2024
8	Workers (future)	OHS; PPE; first aid; accident reporting; grievance access	Section 6.2.6; ESMP Table 7.1 (OHS row); Grievance Redress Mechanism (Section 7.9)

8.7 Public Registry and Information Disclosure

In accordance with Section 245 of the Anambra State Environmental Management, Protection and Administration Law, 2024, a Public Registry for this project shall be maintained by the Department of Ecology in the Anambra State Ministry of Environment from the commencement of the environmental assessment until the completion of any follow-up programme in respect of the project. The Public Registry shall contain all records and information collected or submitted with respect to the environmental assessment, including this EIA Report, all monitoring reports submitted during construction and operation, any correspondence between the proponent and the EIA Committee or regulatory authorities, and the record of stakeholder consultation documented in this chapter.

Members of the public, including any person whose interests may be affected by the project, are entitled under Section 307 of the Anambra State Environmental Management, Protection and Administration Law, 2024, to request access to environmental information held in the Public Registry. The procedures for accessing environmental information, including the fourteen-working-day response obligation of the appropriate authority under Section 309(1) of the 2024 Law, are available from the Anambra State Ministry of Environment. This EIA Report, upon approval by the EIA Committee, shall be made available in the Public Registry for inspection by any interested person, in fulfilment of the transparency obligations established under Part 12 of the 2024 Law.

Additionally, in fulfilment of Section 315(3)(d) of the Anambra State Environmental Management, Protection and Administration Law, 2024, which requires that notification of a proposed project be made by publication in the local press or in a manner commonly used in the locality, the proponent is committed to placing a public notice of this project in a widely

circulated newspaper in Anambra State before the commencement of construction, in addition to the physical notice postings referred to in Section 8.4.4 of this Chapter.

8.8 Regulatory Compliance Schedule

Table 8.4 below sets out the key regulatory approvals, permits, notifications and clearances that the project proponent is required to obtain or fulfil in connection with the EIA process and the commencement of project activities, together with the applicable regulatory basis and the indicative timing for each.

Table 8.4: Regulatory Compliance Schedule - EIA Process and Project Approvals

S/N	Regulatory Requirement	Applicable Authority	Legal Basis	Timing
1	Registration of project in the Public Registry of the Anambra State Ministry of Environment and payment of prescribed registration fee	ANSEMPAL / Dept. of Ecology	Section 231(1) ANSEMPAL Law 2024	Before EIA submission
2	Formal application to the Commissioner for Environment; referral of application to EIA Committee	ANSEMPAL / EIA Committee	Section 231(1), 227(4) ANSEMPAL Law 2024	Before EIA submission
3	Submission of completed EIA Report to Federal Ministry of Environment for review and issuance of EIA certificate	Federal Ministry of Environment / NESREA	EIA Act Cap E12; EIA Regs 2021	Upon completion of EIA Report
4	Submission of EIA Report to Anambra State Ministry of Environment / EIA Committee for review and Preliminary Report	EIA Committee, Anambra State Ministry of Environment	Part 8, Sections 228–244 ANSEMPAL Law 2024	Upon completion of EIA Report
5	Publication of public notice of proposed project in local press and posting at site and government offices	Proponent / ANSEMPAL	Section 315(3)(a)–(d) ANSEMPAL Law 2024	Before or concurrent with EIA submission
6	Twenty-one day public comment period on EIA Report	EIA Committee / Public	Section 315(1)(a) ANSEMPAL Law 2024	During EIA review period

S/N	Regulatory Requirement	Applicable Authority	Legal Basis	Timing
7	Receipt of EIA Preliminary Report from EIA Committee; fulfilment of any conditions specified therein	EIA Committee, Anambra State	Section 231(3)–(4) ANSEMPAL Law 2024	After EIA review
8	Fulfilment of all conditions in EIA Certificate / Preliminary Report before commencement of construction	Federal / State Regulatory Authorities	Section 233(2) ANSEMPAL Law 2024; EIA Act	Before construction commences
9	Appointment of Site Environmental Officer and preparation of contractor's site-specific ESMP	Proponent	EIA Regs 2021; ESMP (Chapter 7)	Before construction commences
10	Application for and receipt of Wastewater Clearance from Wastewater Management Office	Wastewater Management Office	Section 216(1) ANSEMPAL Law 2024	At least 3 months before first occupation
11	Engagement of ASWAMA-licensed Private Waste Collector for construction and operational phases	ASWAMA	Section 152 ANSEMPAL Law 2024	Before waste generation commences
12	Submission of first Quarterly Environmental Performance Report to ANSEMPAL and EIA Committee	Proponent / SEO	Section 225(r) ANSEMPAL Law 2024	End of first construction quarter
13	Pre-commissioning water quality analysis of estate borehole/well	Accredited Laboratory	NIS 554:2015; ANSEMPAL Law 2024	Before first occupation
14	Submission of Annual Environmental and Social Performance Report (operational phase)	Estate Management / ANSEMPAL	ESMP (Chapter 7); EIA Regs 2021	Annually from first occupation

8.9 Commitment to Ongoing Stakeholder Engagement

Stakeholder consultation does not conclude with the preparation and submission of this EIA Report. The proponent recognises, and the provisions of the Anambra State Environmental Management, Protection and Administration Law, 2024 make clear particularly through the quarterly monitoring obligations of the EIA Committee under Section 225(r) and the citizens' rights established under Part 12 that ongoing engagement with stakeholders throughout the

construction and operational phases of the project is both a legal obligation and a prerequisite for the effective management of the project's environmental and social performance.

The proponent accordingly commits to the following ongoing stakeholder engagement activities:

- i. Maintaining and operating the Grievance Redress Mechanism established in Section 7.9 of this Report throughout the construction and operational phases, with a written grievance register accessible to all workers, residents and members of the public, and a commitment to acknowledge all complaints within forty-eight hours and resolve them within fifteen working days;
- ii. Providing regular, proactive communication to the management of the ICC, Awka, and to neighbouring property owners regarding construction schedules, particularly noisy or dusty operations, and any changes in working hours or access arrangements that may affect their activities;
- iii. Maintaining engagement with the Agu Awka community leadership throughout the construction period and notifying community representatives of any significant project developments, including the commencement of each major construction phase;
- iv. Ensuring that all quarterly environmental performance reports submitted to ANSEMPAL and the EIA Committee during the construction phase are made available in the Public Registry for inspection by any interested member of the public, in accordance with Section 245 of the Anambra State Environmental Management, Protection and Administration Law, 2024;
- v. Conducting an annual resident satisfaction survey during the operational phase, covering the adequacy of all estate environmental management services, and making the results available to ANSEMPAL as part of the Annual Environmental and Social Performance Report;
- vi. Ensuring that all estate residents are informed of their rights under Part 12 of the Anambra State Environmental Management, Protection and Administration Law, 2024, including the right to access environmental information and to lodge complaints regarding environmental nuisances with ANSEMPAL, the EIA Committee or the Sanitation Court established under Section 167 of that Law.

CHAPTER NINE

CONCLUSIONS AND RECOMMENDATIONS

9.1 Introduction

This chapter presents the overall conclusions of the Environmental Impact Assessment conducted for the proposed Zion Garden Residence (Zion G.R.A.) project by EL Ehyeh Properties Limited (RC: 1499498), located at Agu Awka, opposite the APGA Headquarters, Old Enugu/Onitsha Road, Awka South Local Government Area, Anambra State. It draws together the principal findings of all preceding chapters of this Report encompassing the project description, the analysis of alternatives, the baseline environmental characterisation, the impact assessment, the mitigation measures, the Environmental and Social Management Plan and the stakeholder consultation record into a consolidated assessment of the environmental and social acceptability of the proposed project. It also sets out the recommendations of Stellovate Limited as the EIA consultant, directed to the project proponent, the EIA Committee and the relevant regulatory authorities.

This EIA has been undertaken in strict compliance with the requirements of the Environmental Impact Assessment Act, Cap E12, Laws of the Federation of Nigeria, 2004 (as amended), the Environmental Impact Assessment Procedures and Charges Regulations, 2021, and the Anambra State Environmental Management, Protection and Administration Law, 2024 in particular the provisions of Part 8 of that Law (Sections 223 to 253), which establish the ESHSMP/EIA framework for Anambra State, prescribe the minimum content of EIA reports, and define the roles and responsibilities of the EIA Committee, the Commissioner for Environment, and the project proponent. This Report fulfils the minimum content requirements of Section 228 of the 2024 Law and is submitted for the consideration of the EIA Committee and of the Federal Ministry of Environment in accordance with the prescribed EIA review procedures.

9.2 Summary of the Project

The proposed project involves the development of a residential plot estate covering a total area of 11,759.44 square metres at Plot 36, Old Enugu/Onitsha Road, Agu Awka, Awka South Local Government Area, Anambra State. The project is being developed by EL Ehyeh Properties Limited, incorporated under the Companies and Allied Matters Act with RC Number 1499498, represented by its Chief Executive Officer, Mr. Ndefo Chinonso Hillary.

The project is a plot estate model in which purchasers acquire individual plots and develop their own residential buildings. Estate infrastructure to be provided by the proponent includes: an asphalt internal road network; a perimeter fence with security gate and manned security post; surface drainage channels; a centralised borehole or covered well water supply system with distribution to individual plots; an EEDC grid electricity connection; and landscaped open spaces. Individual wastewater management will be through soak-away pit systems installed by each plot holder. Solid waste collection during the operational phase will be managed through engagement with a licensed Private Waste Collector registered with the Anambra State Waste Management Authority. The estimated construction period is twelve to eighteen months.

The project site is located in GPS-confirmed co-ordinates ranging from 6°13'50" N to 6°13'59" N latitude and from 7°6'44" E to 7°6'50" E longitude, with recorded elevations across the five reference points of 160 to 190 feet (approximately 49 to 58 metres) above sea level. The site is partially developed, has been acquired through direct purchase and government allocation, and is supported by valid documentation including a Certificate of Occupancy and Deed of Assignment.

9.3 Summary of Key Environmental and Social Findings

The key findings of the baseline environmental assessment and the impact evaluation are summarised below.

9.3.1 Baseline Environmental Conditions

The project site occupies gently undulating terrain within the rapidly urbanising Awka South corridor. Soils are predominantly sandy loam to clay loam in texture, slightly to near-neutral in pH (ranging from 5.25 at SS4 to 7.10 at SS1), of moderate organic content and free of significant heavy metal contamination. The site well water exhibits good chemical quality for most parameters but is compromised by elevated Total Suspended Solids (209.5 mg/L against

a guideline of 30 mg/L), elevated BOD₅ (8.99 mg/L against a guideline of 3 mg/L), the presence of total coliforms at 140 MPN/100 mL, and objectionable physical properties (odour, taste and turbidity), rendering it unsuitable for direct consumption without treatment. Ambient air quality is good, with all monitored parameters within WHO and NESREA guideline values. The noise environment is consistent with a mixed residential-commercial setting. No protected species or significant ecological habitats were identified within the project footprint.

9.3.2 Significant Impacts Identified

The impact assessment identified the following principal impacts of moderate to moderate-high significance, all of which are amenable to effective mitigation through the measures proposed in this Report:

- i. Construction-phase dust generation and air quality deterioration, of moderate significance in the vicinity of the site frontage and the ICC, manageable through water spraying, vehicle covering and PPE provision;
- ii. Construction-phase noise and vibration, of moderate significance, manageable through restricted working hours, equipment silencers, acoustic barriers and advance notification to the ICC and neighbouring properties;
- iii. Soil erosion and sediment runoff during construction, of moderate to high significance particularly during the rainy season, manageable through phased earthworks, temporary bunds and silt traps, and prompt re-vegetation;
- iv. Construction waste generation, of moderate significance, manageable through segregation, on-site reuse, ASWAMA-licensed disposal and strict prohibition of open burning;
- v. Operational wastewater management and groundwater contamination risk, of moderate to high long-term significance if soak-away pit standards are not enforced and the required wastewater clearance under Section 216(1) of the Anambra State Environmental Management, Protection and Administration Law, 2024, is not obtained;
- vi. Operational solid waste generation, of moderate significance, fully manageable through the engagement of a licensed waste collector and estate waste management rules.

- v. The estate management shall install and maintain a CCTV surveillance system covering the entrance gate, perimeter and common areas, ensure cameras remain operational at all times, and retain footage for a minimum of thirty days in accordance with good security management practice

The most significant positive impacts of the project are the long-term provision of organised, well-serviced and secure residential accommodation contributing to the reduction of the housing deficit in Awka South; the generation of sustained employment and economic activity during the construction phase; and the contribution to urban development, government revenues and property values in the Old Enugu/Onitsha Road corridor over the operational life of the estate. These positive impacts are assessed as significant and long-term in nature.

9.3.3 Residual Impacts After Mitigation

With the full implementation of the mitigation measures specified in Chapter Six and the Environmental and Social Management Plan presented in Chapter Seven, the residual impacts of the project are assessed as follows: construction-phase dust, noise and erosion impacts will be reduced to low to moderate significance and will cease on completion of construction; wastewater management risks will be reduced to low to moderate significance with adequate soak-away standards and the obtainment of the required wastewater clearance; and all remaining operational impacts will be managed to low or negligible significance through the ongoing implementation of the ESMP by the estate management. No significant, irreversible or unmitigable adverse environmental impacts have been identified in the course of this assessment.

9.4 Environmental and Social Acceptability

On the basis of the comprehensive assessment of all relevant environmental and social parameters carried out in this EIA, and subject to the conditions and recommendations set out in Section 9.6 of this chapter, it is the considered professional finding of Stellovate Limited that the proposed Zion Garden Residence project is environmentally and socially acceptable. The project is consistent with the applicable land-use character of the Old Enugu/Onitsha Road corridor, is compatible with the prevailing trend of planned residential estate development in the Awka South area, and will not give rise to significant adverse environmental impacts that

cannot be effectively mitigated through the application of good engineering and environmental management practices.

The project is consistent with the objectives of the Anambra State Environmental Management, Protection and Administration Law, 2024, as stated in Section 4 of that Law — namely, to provide a clean, safe and healthy environment for all residents in the State and to enable citizens to access the various public amenities and segments of the environment for residential purposes. It is also consistent with the national development objective of improving housing provision in Nigerian urban areas and with the commitment of the Anambra State Government to the orderly and well-managed development of the State's urban centres.

This finding of environmental and social acceptability is, however, conditional upon the full and continuous implementation of the mitigation measures and management commitments specified in this Report, the obtainment of all required regulatory approvals and clearances in advance of the relevant project activities, and the timely submission of all required monitoring and performance reports to the relevant regulatory authorities throughout the life of the project.

9.5 Assessment of Compliance with the Anambra State Environmental Management, Protection and Administration Law, 2024

The following table provides a consolidated assessment of the principal compliance requirements of the Anambra State Environmental Management, Protection and Administration Law, 2024, as they apply to this project, and confirms how each requirement has been addressed in this EIA Report.

Table 9.1: Compliance Assessment on Anambra State Environmental Law, 2024

S/N	Provision	Requirement	How Addressed in this Report
1	Section 227	No proponent shall undertake a project without prior consideration of environmental effects	This EIA Report was commissioned and prepared before commencement of any construction activities
2	Section 228	Minimum content of ESHSMP / EIA Report including project description, baseline, alternatives, impacts, mitigation, gaps and summary	All components addressed across Chapters 1–9 of this Report

S/N	Provision	Requirement	How Addressed in this Report
3	Section 229	Environmental effects to be assessed with detail commensurate with their likely significance	All significant impacts assessed in detail in Chapter 5; less significant impacts addressed proportionately
4	Section 230	Opportunity for public comments before issuing EIA Report	Stakeholder consultation programme documented in Chapter 8; public notice requirements addressed in Section 8.4.4
5	Section 231	Proponent to register in Public Registry and apply to Commissioner	Registration and application process initiated as documented in Section 8.4.3 of this Report
6	Section 216(1) Part 7	Estate developers accommodating 50+ persons must obtain wastewater clearance	Commitment to obtain wastewater clearance before first occupation documented in Sections 6.3.1 and 7.5 (ESMP Table 7.2)
7	Section 282, Part 11	Prohibition of noise causing nuisance in residential places	Noise mitigation measures documented in Sections 6.2.2, 6.3.4 and ESMP Tables 7.1, 7.2
8	Sections 255(1)(d),(g) Part 9	Dust, effluvia and noise from premises constituting statutory nuisances subject to enforcement	Dust and noise mitigation measures in Sections 6.2.1, 6.2.2; commitment to best practicable means documented throughout
9	Sections 136,137,145,352 Part 6/14	Prohibition of burning; waste to approved sites only; removal of demolition debris; construction waste oversight	Construction and operational waste management provisions in Sections 6.2.4, 6.3.2 and ESMP Tables 7.1, 7.2
10	Sections 79, 82 Part 4	Landscaping of tenements; mandatory annual tree planting	Landscaping and tree planting commitments in Sections 6.3.5 and ESMP Table 7.2
11	Section 225(r)	EIA Committee to conduct quarterly monitoring of projects on Mandatory Study List	Quarterly reporting obligations accepted by proponent in Sections 7.8.1 and 8.8 (Table 8.3, item 12)
12	Part 12 (Sections 307,314,315,317)	Citizens' rights to environmental information and public participation	Public registry, notice posting, public comment period and ongoing disclosure commitments in Sections 8.4, 8.7 and 8.9

S/N	Provision	Requirement	How Addressed in this Report
13	Section 249	Penalty for non-compliance: individuals - ₦500,000 or 3 months; companies - ₦1M–₦10M	Proponent acknowledges penalties; ESMP designed to ensure full compliance and avoid enforcement action
14	Section 251	EIA Consultant to be a firm registered with EIA Committee	Stellovate Limited is authorised by the Anambra State Ministry of Environment and the Federal Ministry of Environment as stated on title page

9.6 Recommendations

Stellovate Limited, as the EIA consultant, makes the following recommendations directed to the project proponent, the EIA Committee, the relevant regulatory authorities and, where applicable, to the estate management body:

9.6.1 Recommendations to the Project Proponent - EL Ehyeh Properties Limited

- i. The proponent shall not commence any site preparation, earthworks or construction activities until the EIA Certificate has been received from the Ministry of Environment and the EIA Preliminary Report and conditions of approval have been received from the EIA Committee of the Anambra State Ministry of Environment, in full compliance with Section 233 of the Anambra State Environmental Management, Protection and Administration Law, 2024, and Section 1 of the EIA Act, Cap E12;
- ii. A qualified Site Environmental Officer shall be appointed by the proponent no later than thirty days before the mobilisation date and the proponent shall ensure that the contractor has submitted an approved site-specific Environmental Management and Safety Plan before any ground is broken;
- iii. An application for wastewater clearance under Section 216(1) of the Anambra State Environmental Management, Protection and Administration Law, 2024, shall be submitted to the Wastewater Management Office no later than three months before the anticipated date of first occupation of any plot within the estate;
- iv. A pre-commissioning water quality analysis of the estate borehole or well shall be conducted by an accredited laboratory, with results assessed against the NIS 554:2015 drinking water standard, before any water is distributed for human consumption. If the

- water does not meet the applicable standard, an appropriate treatment system shall be installed and verified as operational before first use;
- v. The proponent shall ensure that all construction contracts incorporate the applicable ESMP requirements by reference and include enforceable environmental and safety performance obligations, with non-compliance sanctions, applicable to the contractor and all sub-contractors;
 - vi. A geotechnical investigation and foundation design report, prepared by a registered geotechnical engineer, shall be commissioned and its findings reviewed before the commencement of any foundation works, given the moderately variable soil pH and the presence of sandy loam soils susceptible to settlement and erosion;
 - vii. A quantitative baseline noise level survey, using a calibrated sound level meter, shall be conducted at the site boundary and at the nearest sensitive receptors specifically the ICC frontage and the nearest neighbouring residential building before the commencement of construction, to provide a documented baseline against which construction noise compliance can be assessed;
 - viii. All landscaping, tree planting and green space management obligations under Sections 79 and 82 of the Anambra State Environmental Management, Protection and Administration Law, 2024, shall be incorporated as express obligations in the estate management deed or constitution, enforceable against the estate management body and individual plot holders.

9.6.2 Recommendations to the EIA Committee and Regulatory Authorities

- i. The EIA Committee is requested to complete its review of this EIA Report and to issue the EIA Preliminary Report in accordance with the procedures established under Sections 231 to 244 of the Anambra State Environmental Management, Protection and Administration Law, 2024, within the period prescribed under applicable EIA procedural guidelines, in order to avoid undue delay to a project that will contribute to the resolution of the housing deficit in Awka South;
- ii. ANSEMPAL is requested to place a copy of this EIA Report in the Public Registry maintained by the Department of Ecology, in accordance with Section 245 of the Anambra State Environmental Management, Protection and Administration Law, 2024, and to make the Report available for inspection by any interested member of the

- public within fourteen working days of its receipt, in fulfilment of the obligations of Section 309(1) of that Law;
- iii. The EIA Committee, in the exercise of its monitoring function under Section 225(r) of the Anambra State Environmental Management, Protection and Administration Law, 2024, is requested to schedule the first quarterly site monitoring visit to the Zion Garden Residence project within ninety days of the commencement of construction, and to maintain a regular monitoring schedule thereafter throughout the construction phase;
 - iv. ANSEWCCA is requested to review the drainage and erosion control provisions of the project's ESMP and to provide technical guidance on any additional erosion control measures that ANSEWCCA, in the exercise of its mandate under Part 2 of the 2024 Law, considers necessary to protect the watershed and drainage network in the vicinity of the project site;
 - v. The Wastewater Management Office is requested to process the proponent's application for wastewater clearance under Section 216(1) of the Anambra State Environmental Management, Protection and Administration Law, 2024, expeditiously upon submission, and to provide clear guidance on the design standards required for soak-away pit systems within residential estates in the Awka South area.

9.6.3 Recommendations to the Estate Management

- i. The estate management body, upon its constitution, shall formally adopt this ESMP as the governing environmental and social management framework for the estate and shall ensure that all estate rules and regulations incorporate the applicable environmental management requirements as enforceable obligations binding on all plot holders and residents;
- ii. The estate management shall ensure that a sufficient number of ASWAMA-licensed waste collection bins and communal storage points are installed within the estate before first occupation, and that a signed waste collection contract with a licensed Private Waste Collector is in place before the first residents take up occupation;
- iii. The estate management shall prepare, within twelve months of first occupation, an Estate Environmental Management Policy statement that sets out, in terms accessible to residents, the estate's environmental management commitments, the obligations of

- plot holders and residents, the contact details of ANSEMPAL, the grievance mechanism procedures and the sanctions applicable for non-compliance;
- iv. The estate management shall conduct the first annual resident satisfaction survey no later than twelve months after first occupation, and shall use the results to identify and implement improvements in environmental management service delivery.

9.7 Overall Conclusion

The Environmental Impact Assessment of the proposed Zion Garden Residence project has been conducted in a comprehensive, systematic and legally compliant manner, in accordance with the Environmental Impact Assessment Act, Cap E12, the Environmental Impact Assessment Procedures and Charges Regulations, 2021, and the Anambra State Environmental Management, Protection and Administration Law, 2024. The assessment has examined all phases of the project life cycle site preparation, construction, operation and decommissioning and has considered the full range of potential environmental and social impacts, including cumulative impacts and the interaction of the project with other developments in the Old Enugu/Onitsha Road corridor.

The assessment concludes that the proposed project is technically feasible and environmentally and socially acceptable. Its adverse impacts are neither severe nor irreversible and are fully amenable to effective management through the application of the mitigation measures and the Environmental and Social Management Plan presented in Chapters Six and Seven of this Report. The project's positive contributions to housing provision, employment generation and urban development in Awka South are significant and enduring, and substantially outweigh the manageable and temporary adverse impacts associated with the construction phase.

The finding of environmental acceptability is made subject to the following overarching conditions, which reflect the requirements of applicable legislation and the obligations identified in the preceding sections of this Report:

- i. No construction activities shall commence until the EIA Certificate has been received from the Ministry of Environment and the EIA Committee's Preliminary Report and conditions of approval have been received and fully complied with;

- ii. All mitigation measures and ESMP provisions specified in this Report shall be implemented in full, by the parties identified as responsible, at the times specified, for the duration of the relevant project phase;
- iii. All required regulatory approvals, permits, notifications and clearances shall be obtained in advance of the relevant project activities, in accordance with the Regulatory Compliance Schedule presented in Table 8.3 of this Report;
- iv. All required environmental and social monitoring activities shall be conducted and all required performance reports shall be submitted to ANSEMPAL, the EIA Committee and other relevant regulatory authorities at the frequencies and in the formats specified in the ESMP;
- v. The proponent and estate management shall maintain a culture of transparency, proactive stakeholder engagement and continuous improvement in environmental management performance throughout the life of the project, in accordance with the commitments documented in Chapter Eight of this Report.

It is therefore the professional recommendation of Stellovate Limited that the Zion Garden Residence project, developed by EL Ehyeh Properties Limited, be approved to proceed by the relevant regulatory authorities, subject to the conditions, commitments and obligations documented in this EIA Report, and subject to the full implementation of the Environmental and Social Management Plan presented in Chapter Seven. This approval, when granted, will contribute to the realisation of the objectives of the Anambra State Environmental Management, Protection and Administration Law, 2024 the provision of a clean, safe and healthy environment for all residents of Anambra State and to the sustainable development of the Awka South Local Government Area for the benefit of its present and future residents.

REFERENCES

1. Federal Legislation and Subordinate Instruments

- Federal Republic of Nigeria (2004). *Environmental Impact Assessment Act, Chapter E12, Laws of the Federation of Nigeria, 2004 (as amended)*. Federal Ministry of Justice, Abuja.
- Federal Republic of Nigeria (2021). *Environmental Impact Assessment Procedures and Charges Regulations, 2021*. Federal Ministry of Environment, Abuja.
- Federal Republic of Nigeria (1990). *Factories Act, Chapter F1, Laws of the Federation of Nigeria*. Federal Ministry of Labour and Employment, Abuja.
- Federal Republic of Nigeria (1992). *Federal Highways Act, Chapter F19, Laws of the Federation of Nigeria*. Federal Ministry of Works, Abuja.
- National Environmental Standards and Regulations Enforcement Agency - NESREA (2009). *National Environmental (Noise Standards and Control) Regulations, 2009*. Federal Ministry of Environment, Abuja. Statutory Instrument made pursuant to the NESREA Act, 2007.
- National Environmental Standards and Regulations Enforcement Agency - NESREA (2011). *National Environmental (Sanitation and Wastes Control) Regulations, 2011*. Federal Ministry of Environment, Abuja.
- National Environmental Standards and Regulations Enforcement Agency - NESREA (2011). *National Environmental (Air Quality Control) Regulations, 2011*. Federal Ministry of Environment, Abuja.
- Federal Road Safety Corps - FRSC (2012). *Federal Road Safety Corps (Establishment) Act, Chapter F19A, and Highway Code of Nigeria*. FRSC, Abuja.

2. Anambra State Legislation and Subordinate Instruments

- Anambra State Government (2024). *Anambra State Environmental Management, Protection and Administration Law, 2024*. Anambra State House of Assembly, Awka. [Establishing ANSEMPAL, ASWAMA, ANSEWCCA, the Clear Drainage and Inland Flood Management Agency, the Wastewater Management Office, the EIA Committee and the OCHA Brigade; Parts 2, 3, 6, 7, 8, 9, 11 and 12 cited throughout this Report.]
- Anambra State Government (2024). *Anambra State Environmental Management, Protection and Administration Law, 2024 - Schedule 8: Mandatory Study List*. Anambra State Ministry of Environment, Awka.
- Anambra State Ministry of Environment (2024). *EIA Registration, Procedures and Fee Schedule for Projects Subject to Mandatory Study (pursuant to Part 8, Anambra State Environmental Management, Protection and Administration Law, 2024)*. ANSEMPAL / Department of Ecology, Awka.

3. International Conventions, Treaties and Multilateral Environmental Agreements

Convention on International Trade in Endangered Species of Wild Fauna and Flora - CITES (1973). *Convention on International Trade in Endangered Species of Wild Fauna and Flora*. Washington D.C. [Ratified by Nigeria; consulted in relation to ecological baseline assessment, Chapter Four.]

United Nations Framework Convention on Climate Change - UNFCCC (1992). *United Nations Framework Convention on Climate Change*. UNFCCC Secretariat, Bonn.

United Nations (2015). *Paris Agreement under the United Nations Framework Convention on Climate Change*. UNFCCC Secretariat, Bonn. [Entered into force 4 November 2016; cited in relation to climate change considerations and GHG emissions assessment, Section 3.15.]

International Labour Organization - ILO (2001). *ILO Guidelines on Occupational Safety and Health Management Systems (ILO-OSH 2001)*. International Labour Office, Geneva. [Cited in relation to construction phase occupational health and safety management, Sections 3.12 and 6.2.6.]

4. Nigerian National Standards

Standards Organisation of Nigeria - SON (2015). *NIS 554:2015 - Nigerian Standard for Drinking Water Quality*. Standards Organisation of Nigeria, Lagos. [Principal potable water standard applied to baseline groundwater assessment (Chapter Four) and pre-commissioning water quality testing commitment (Chapter Three and ESMP, Chapter Seven).]

Standards Organisation of Nigeria - SON (2004). *NIS 037:2004 - Nigerian Standard for Potable Water*. Standards Organisation of Nigeria, Lagos. [Supplementary reference to NIS 554:2015.]

5. International Environmental Standards and Guidelines

World Health Organization - WHO (2022). *WHO Guidelines for Drinking-water Quality: Fourth Edition Incorporating the First and Second Addenda*. WHO, Geneva. [Applied in assessment of baseline groundwater quality parameters, Chapter Four, Table 4.2.]

World Health Organization - WHO (2021). *WHO Global Air Quality Guidelines: Particulate Matter (PM_{2.5} and PM₁₀), Ozone, Nitrogen Dioxide, Sulfur Dioxide and Carbon Monoxide*. WHO, Geneva. [Applied in assessment of baseline ambient air quality, Chapter Four, Section 4.6.]

World Health Organization - WHO (2018). *Environmental Noise Guidelines for the European Region*. WHO Regional Office for Europe, Copenhagen. [Consulted as supplementary reference for noise impact assessment, Chapter Five, Section 5.2.2.]

International Finance Corporation - IFC (2007). *IFC Environmental, Health, and Safety General Guidelines*. World Bank Group, Washington D.C. [Consulted in formulation of construction phase HSE management provisions, Sections 3.12, 5.2.6 and 6.2.6.]

International Finance Corporation - IFC (2007). *IFC Environmental, Health, and Safety Guidelines for Real Estate and Hospitality*. World Bank Group, Washington D.C.

6. Greenhouse Gas Emissions and Climate Change

Intergovernmental Panel on Climate Change - IPCC (2006). *IPCC Guidelines for National Greenhouse Gas Inventories, Volume 2: Energy*. IGES, Hayama, Japan. [Diesel combustion emission factor 2.68 kgCO₂e/L applied in Section 3.15.]

Intergovernmental Panel on Climate Change - IPCC (2019). *2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories*. IPCC, Geneva. [Consulted for updated emission factors and methodology.]

Intergovernmental Panel on Climate Change - IPCC (2014). *Climate Change 2014: Impacts, Adaptation, and Vulnerability - Part B: Regional Aspects. Contribution of Working Group II to the Fifth Assessment Report of the IPCC*. Cambridge University Press, Cambridge. [Cited in relation to climate change projections for West Africa, Sections 4.3.5 and 3.15.]

Energy Commission of Nigeria - ECN (2022). *Nigeria Electricity Grid Emission Factor*. Energy Commission of Nigeria, Abuja. [Grid emission factor ~0.43 kgCO₂e/kWh applied in GHG emission estimates, Section 3.15.]

Intergovernmental Panel on Climate Change - IPCC (2006). *IPCC Guidelines for National Greenhouse Gas Inventories, Volume 4: Agriculture, Forestry and Other Land Use — Chapter 4: Forest Land*. IGES, Hayama, Japan. [Tier 1 default carbon sequestration factor 0.3–0.5 tCO₂e/tree/year for tropical secondary forest species applied in Section 3.15.]

7. Government Planning, Policy and Institutional Documents

Anambra State Government (2023). *Anambra State Development Plan 2023–2030*. Office of the Governor, Anambra State, Awka.

Anambra State Ministry of Environment (2024). *ANSEMPAL Institutional Mandate and Regulatory Functions under the Anambra State Environmental Management, Protection and Administration Law, 2024*. ANSEMPAL, Awka.

Anambra State Erosion, Watershed and Climate Change Agency - ANSEWCCA (2023). *Anambra State Erosion Risk and Watershed Management Strategy*. ANSEWCCA, Awka. [Cited in relation to erosion susceptibility of the project area and ANSEWCCA mandate, Sections 4.2 and 5.2.3.]

- Anambra State Waste Management Authority - ASWAMA (2024). *ASWAMA Private Waste Collector Licensing Requirements and Approved Disposal Sites Register*. ASWAMA, Awka. [Cited in relation to solid waste management obligations, Sections 3.9.4, 5.3.2, 6.3.2 and ESMP, Chapter Seven.]
- Federal Ministry of Environment (2016). *Nigeria's First Biennial Update Report to the UNFCCC*. Federal Ministry of Environment, Abuja.
- Federal Ministry of Environment (2021). *Nigeria's Updated Nationally Determined Contribution (NDC) under the Paris Agreement*. Federal Ministry of Environment, Abuja.
- National Bureau of Statistics - NBS (2023). *Annual Abstract of Statistics 2022*. National Bureau of Statistics, Abuja.
- Awka South Local Government Area (2024). *Awka South LGA Socio-Economic Profile and Land Use Planning Data*. Awka South LGA Secretariat, Awka.

8. Academic and Scientific Literature

- Akpodiogaga-a, P. and Odjugo, O. (2010). *General Overview of Climate Change Impacts in Nigeria*. Journal of Human Ecology, 29(1), pp. 47–55.
- Eze, B.E. and Nwobi, E.E. (2017). *Assessment of Groundwater Quality in Awka Urban Area of Anambra State, Nigeria*. IOSR Journal of Environmental Science, Toxicology and Food Technology, 11(4), pp. 35–42.
- Igwe, O. and Adepehin, E.J. (2017). *Alternative Approach to Gully Erosion Mapping and Susceptibility Assessment: A Case Study from Anambra State, Nigeria*. Environmental Earth Sciences, 76, 306. <https://doi.org/10.1007/s12665-017-6625-8>.
- Iloeje, N.P. (2001). *A New Geography of Nigeria (New Revised Edition)*. Longman Nigeria, Lagos.
- Nweze, N.O. and Orji, M.U. (2015). *Bacteriological Analysis of Some Surface Water Sources in Anambra State, Nigeria*. Annual Research and Review in Biology, 7(4), pp. 229–235.
- Obiadi, I.I., Nwosu, C.M., Ajaegwu, N.E., Anakwuba, E.K., Onuigbo, N.E., Akpunonu, E.O. and Ezim, O.E. (2011). *Gully Erosion in Anambra State, South East Nigeria: Issues and Solution*. International Journal of Environmental Sciences, 2(2), pp. 795–804.
- Ofomata, G.E.K. (ed.) (1975). *Nigeria in Maps: Eastern States*. Ethiope Publishing Corporation, Benin City. [Cited in relation to the physiographic and geomorphological character of the Awka-Orlu Uplands, Section 4.2.]
- Ogbodo, E.N. (2011). *Some Soil Chemical Constraints to Crop Production on the Acid Soils of Abakaliki, South-eastern Nigeria, and Management Options*. World Journal of Agricultural Sciences, 7(1), pp. 15–24. [Cited in relation to soil characteristics typical of south-eastern Nigeria lateritic profiles.]

- Okafor, F.C. (2008). *Urban Housing Dynamics and Residential Density in Awka, Anambra State*. African Journal of Applied Zoology and Environmental Biology, 10, pp. 88–94.
- Okonkwo, C.E., Okafor, I.C. and Ogbuagu, A.N. (2020). *Evaluation of Groundwater Quality for Domestic Use in Parts of Awka, Anambra State, Nigeria*. Nigerian Journal of Technology, 39(3), pp. 891–900.
- Ukpabi, U.H. and Igwe, C.A. (2012). *Infiltration Characteristics and Erodibility of Soils in Different Landscape Positions in a Savanna Zone of Southeastern Nigeria*. Archives of Agronomy and Soil Science, 58(6), pp. 623–635.

9. EIA Methodology and Practice Guidance

- International Association for Impact Assessment - IAIA (1999). *Principles of Environmental Impact Assessment Best Practice*. IAIA, Fargo, North Dakota.
- International Association for Impact Assessment - IAIA (2009). *What is Impact Assessment?* IAIA, Fargo, North Dakota.
- Morris, P. and Therivel, R. (eds.) (2009). *Methods of Environmental Impact Assessment (3rd edition)*. Routledge, London and New York.
- Glasson, J., Therivel, R. and Chadwick, A. (2012). *Introduction to Environmental Impact Assessment (4th edition)*. Routledge, London.
- Wood, C. (2003). *Comparative Evaluation of Environmental Impact Assessment Systems*. In: *Handbook of Environmental Impact Assessment, Volume 2 (ed. J. Petts)*. Blackwell Science, Oxford.

10. Primary Data and Field Investigation Records

- Stellovate Limited (2026). *Field Investigation and Baseline Data Collection Report: Zion Garden Residence, Plot 36, Agu Awka, Awka South LGA, Anambra State - January 2026*. Unpublished field record. Stellovate Limited, Anambra State.
- Stellovate Limited (2026). *Laboratory Analysis Report - Soil Physicochemical Parameters (SS1–SS4) and Groundwater Quality (Site Well): Zion Garden Residence EIA, January 2026*. Accredited Laboratory Analysis Report. Stellovate Limited, Anambra State.
- Stellovate Limited (2026). *Ambient Air Quality and Noise Environment Baseline Measurements: Zion Garden Residence, January 2026*. Unpublished field measurement record. Stellovate Limited, Anambra State.
- Stellovate Limited (2026). *GPS Co-ordinate Survey Report: Zion Garden Residence, Plot 36, Agu Awka, January 2026*. Unpublished survey record. Stellovate Limited, Anambra State. [Five reference points recorded: SS1–SS4 and MP-BF; elevations 160–190 ft above mean sea level.]

EL Ehyeh Properties Limited (2026). *Proponent Environmental Data and Project Information Form: Zion Garden Residence EIA*. Unpublished project document submitted to Stellovate Limited, January 2026.

11. Stakeholder Consultation Records

Stellovate Limited (2026). *Stakeholder Consultation Record - Regulatory Authorities: Anambra State Ministry of Environment / ANSEMPAL, ANSEWCCA, Clear Drainage Agency, ASWAMA and Wastewater Management Office. Zion Garden Residence EIA, January–February 2026*. Unpublished consultation record. Stellovate Limited, Anambra State.

Stellovate Limited (2026). *Stakeholder Consultation Record - International Convention Centre (ICC), Awka Management. Zion Garden Residence EIA, January 2026*. Unpublished consultation record. Stellovate Limited, Anambra State.

Stellovate Limited (2026). *Stakeholder Consultation Record - Agu Awka Community Leaders and Traditional Ruler. Zion Garden Residence EIA, January 2026*. Unpublished consultation record. Stellovate Limited, Anambra State.

Stellovate Limited (2026). *Stakeholder Consultation Record - Neighbouring Property Owners and Occupants, Old Enugu/Onitsha Road Corridor. Zion Garden Residence EIA, January 2026*. Unpublished consultation record. Stellovate Limited, Anambra State.

12. Online and Institutional Resources

Federal Ministry of Environment, Nigeria (2025). *EIA Process and Compliance Requirements*. Available at: www.environment.gov.ng [Accessed: February 2026].

National Environmental Standards and Regulations Enforcement Agency - NESREA (2025). *NESREA Regulatory Framework and Standards*. Available at: www.nesrea.gov.ng [Accessed: February 2026].

Anambra State Government (2025). *Anambra State Ministry of Environment - ANSEMPAL*. Available at: www.anambra.gov.ng [Accessed: February 2026].

World Health Organization - WHO (2025). *Drinking-water Quality Standards and Guidelines*. Available at: www.who.int/water_sanitation_health/water-quality [Accessed: February 2026].

Intergovernmental Panel on Climate Change - IPCC (2025). *IPCC Reports and Emission Factor Database*. Available at: www.ipcc.ch [Accessed: February 2026].

International Association for Impact Assessment - IAIA (2025). *IAIA Resource Library*. Available at: www.iaia.org [Accessed: February 2026].

APPENDICES

APPENDIX A. Certificate of Ownership

Building Certificate of Occupancy
(Statutory Certificate)

0013588

GAL: CoFO_683

STAMP OUT

Jan 8/24

This is to certify that **PATRICK NTAWE** IBE of NO. 12 ALHADI ALADE ODUNWU STREET, PARK VIEW, IKOYE, LAGOS STATE hereinafter called the holder/holders is/are granted a right of occupancy in respect of **PLOT 180 AT BLOCK 58 AT AWKASOUTH L.G.A. (ALSO KNOWN AS PLOTS 1N145 - 1N148 AGU-AWKA INDUSTRIAL EXTENSION(PART OF) (NOW MILLENNIUM CITY LAYOUT), AWKA CAPITAL TERRITORY)**, described in the Schedule and more particularly marked and delineated in the PLAN NO. **ANK(A)8468** printed at the back of this certificate and thereon bordered or verged **RED** for the term of **99 (NINETY-NINE)** years(s) from the 1ST JANUARY 2024 subject to the provisions of the LAND USE ACT, 1978 and to the provisions and conditions implied by virtue of the said Act and Regulations for the time being in force made under the said ACT and to be covenants and conditions herein contained.

RENT: ₦58,788.00 (FIFTY-EIGHT THOUSAND SEVEN HUNDRED AND FIFTY-EIGHT NAIRA) per annum

REVISION PERIOD: The rent hereby reserved shall be revised at the end of every **5 (FIVE)** years(s) of the term of this grant

DESCRIPTION AND VALUE OF BUILDING TO BE ERECTED: Buildings to the value of NOT LESS THAN **₦58,000,000.00 (FIFTY MILLION NAIRA)** to the satisfaction of and in accordance with plans approved by the AS/DEB or such officers as the GOVERNOR may appoint.

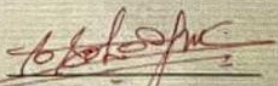
TIME WITHIN WHICH BUILDING(S) IS/ARE TO BE ERECTED AND COMPLETED FIT FOR OCCUPANCY AND USE: within **1 (ONE)** year(s) from the date of execution of this certificate

PURPOSE FOR WHICH THE LAND GRANTED MAY BE USED: RESIDENTIAL (BUILDING)

This certificate of occupancy is issued subject to the following Covenants and conditions being observed by the holder/holders:

- Not to erect or build or permit to be erected or built on the Land hereby granted any building other than those covenanted to be erected by the virtue of this Certificate of Occupancy and the regulations under the said Act not to make or permit to be made any addition or alteration to the said buildings to be erected except in accordance with plans and specifications approved by the Anambra State Urban Development Board of the Anambra State of Nigeria or any other officer appointed by the board.
- To keep the exterior and interior of the buildings to be erected and all outbuildings and erections which may at any time during the term hereby created be erected on the Land hereby granted and all additions to such buildings and outbuildings and the walls, fences and appurtenances thereof in good tenable repair and condition.
- Not to use the buildings on the said land whether now erected or to be erected here after thereon for any purpose other than that **FOR WHICH THE LAND WAS GRANTED**.
- Not to alienate the right of Certificate of Occupancy hereby granted or any part thereof by sale, assignment, mortgage, transfer of possession, sublease or bequest or otherwise howsoever without the consent of the **GOVERNOR** first had and obtained.
- Not to permit anything to be used or done upon any part of the granted premises which shall be noxious, noisy or offensive or be of any inconvenience or annoyance to tenants or occupiers of premises adjoining or near thereon.
- To maintain standards of accommodation and sanitary and living conditions comfortable with standards obtaining in the neighbourhood.
- To pay forthwith or without demand to the **DIRECTOR OF LANDS** or other persons appointed by him before the issue of this certificate, all survey fees, registration fees, and other charges due in respect of preparation and issue and registration of this certificate.
- To pay an improvement premium of **₦11,030,000.00 (ELEVEN MILLION THIRTY THOUSAND NAIRA)**.
- To install and operate water borne sewage system within six months from the date the buildings erected on the plot are connected to a piped water supply.
- To pay with or without demand within the month of January each year the rent reserved in these presents or any other rent as may be revised in future.

Dated **25/10/24**


PROF. CHARLES CHUKWUMA SOLUDO, CFR
GOVERNOR ANAMBRA STATE

Signature of Holder/Holders: 

Signature of Witness: 

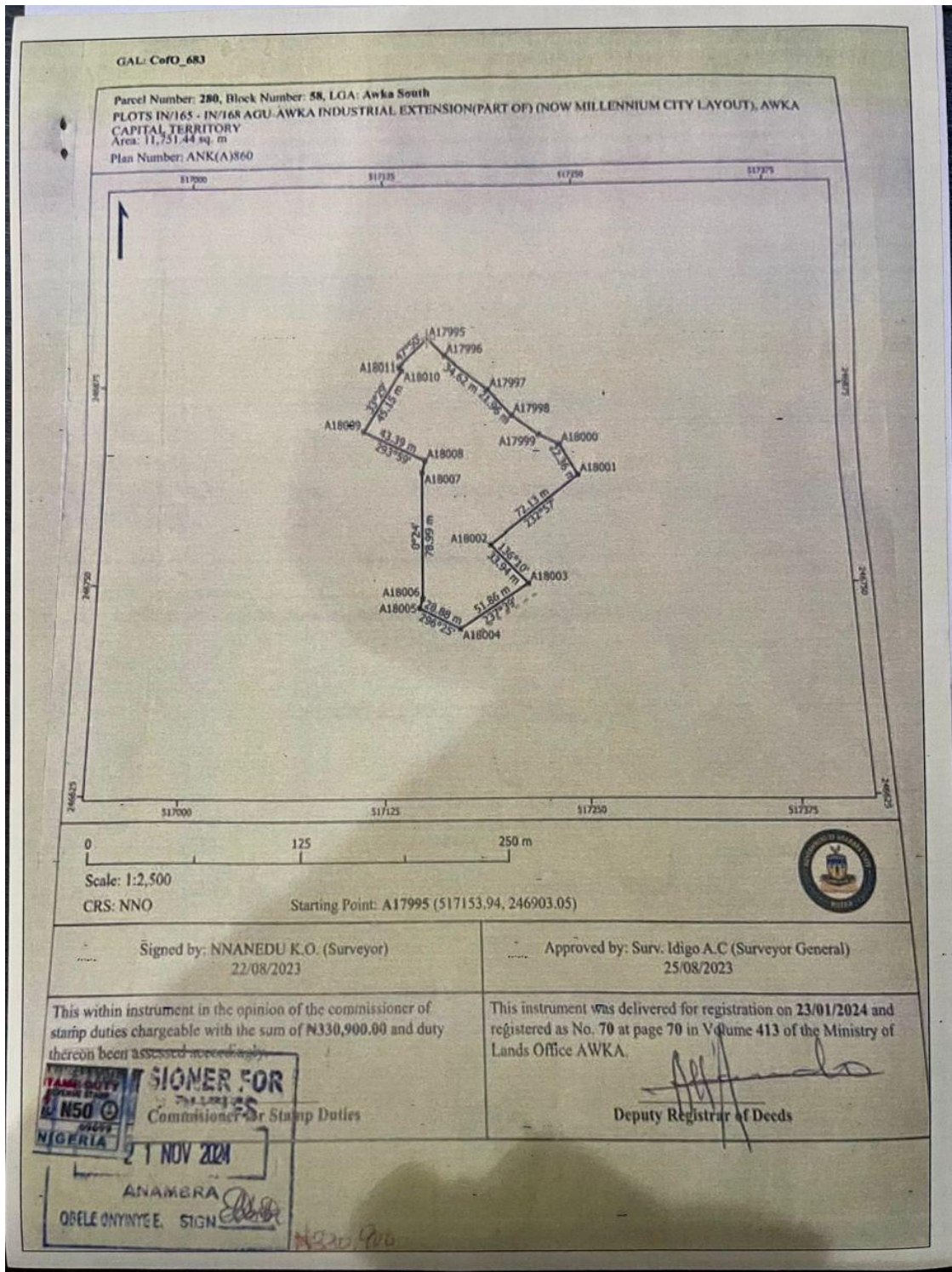
Name of Witness: **BIKE UEGMA**

Occupation of Witness: **CIVIL SERVANT**

Address: **MINISTRY OF LANDS, ANAMBRA STATE**



APPENDIX B. Map of the Site



APPENDIX C. Irrevocable Power of Attorney

IRREVOCABLE POWER OF ATTORNEY

THIS IRREVOCABLE POWER OF ATTORNEY is made this 11th day of July 2025.

BY

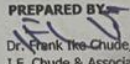
MR. PATRICK NZEKWE IBE, of Awka, Awka-South Local Government Area, Anambra State, Nigeria (hereinafter referred to as the "**Donor**", which expression shall where the context permits include his heirs, executors, administrators and assigns);

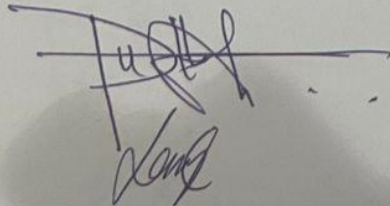
TO

EL EHYEH PROPERTIES LIMITED, a company registered under Nigerian law with address at No. 28 Nnoyelu Street, Umunnokwe Village, Amaenyi, Awka, Awka-South LGA, Anambra State, Nigeria (hereinafter referred to as the "**Donee**", which expression shall include its lawful agents, assigns, and representatives).

RECITALS:

1. The Donor is the legal owner of the land described in the Schedule (hereinafter referred to as "**the Subject Property**"), evidenced by Certificate of Occupancy No. CofO_683 issued by the Anambra State Government on 25 October, 2024 and duly registered.
2. The Donor has agreed to sell 21 out of 25 plots of the Subject Property to the Donee for the total consideration of **₦735,000,000.00 (Seven Hundred and Thirty-Five Million Naira)**, calculated at **₦35,000,000.00** per plot.
3. The remaining 4 plots are granted **at no additional cost** to facilitate infrastructure improvements to enhance the Subject Property's value.

PREPARED BY:

Dr. Frank The Chude,
I.F. Chude & Associates,
Legal Practitioners & Notaries Public
Plot 510, Olusegun Obasanjo Way,
Zone 1, Wuse, Abuja - Nigeria.



APPENDIX C2. Irrevocable Power of Attorney

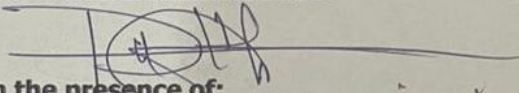
SCHEDULE:

IN RESPECT OF 25 PLOTS OF LAND, MEASURING APPROXIMATELY 11,751.44 SQMS, LYING, BEING AND SITUATE AT THE MILLENNIUM CITY LAYOUT, AGUAWKA, AWKA-SOUTH LOCAL GOVERNMENT AREA, ANAMBRA STATE, NIGERIA, KNOWN AS PARCEL NO. 280, BLOCK 58 (ALSO KNOWN AS PLOTS IN/ 165 – IN/168/1), PLAN NO. ANK(A)860, AND COVERED BY A VALID BUILDING CERTIFICATE OF OCCUPANCY ISSUED BY THE GOVERNMENT OF ANAMBRA STATE ON 25TH OCTOBER, 2024, WITH REFERENCE NO: CofO_683, REGISTERED AS NO. 70 AT PAGE 70 IN VOL. 413 AT THE MINISTRY OF LANDS OFFICE, AWKA, ANAMBRA STATE, NIGERIA.

EXECUTION:

Signed, Sealed & Delivered by the Donor:

MR. PATRICK NZEKWE IBE

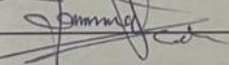


In the presence of:

Name: Lawrence N. Nwale

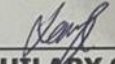
Address: 13 Ogbe Street Umuzaka village Awka

Occupation: Civil Servant

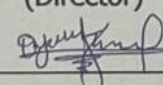
Signature: 

Common Seal of the Donee Affixed:

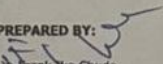
EL EHYEH PROPERTIES LIMITED


NDEFO HILARY CHINONSO

(Director)

 (Secretary)

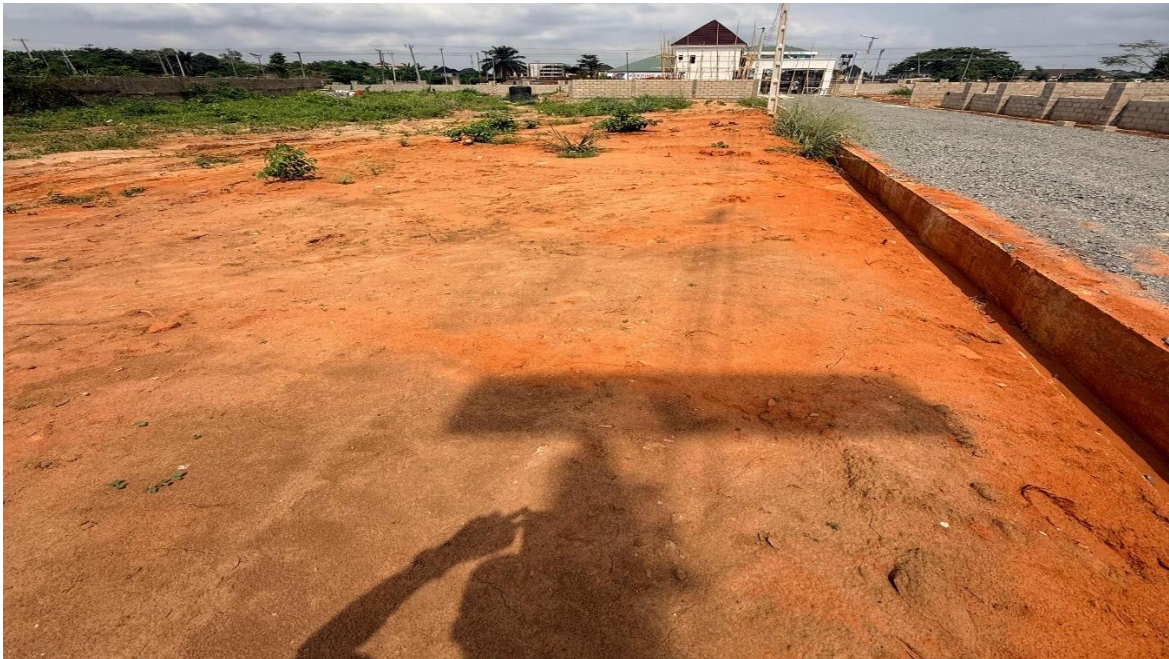


PREPARED BY:

Mr. Frank Ike Chude,
I. F. Chude & Associates,
Legal Practitioners & Notaries Public
Plot 510, Olusegun Obasanjo Way,
Zone 1, Wuse, Abuja – Nigeria.

I.F. CHUDE & ASSOCIATES
(Barristers, Solicitors, Notaries Public & Arbitrators)
Plot 510, Olusegun Obasanjo Way, Zone 1
Wuse, Abuja, Nigeria. P. O. Box, 10017.
Tel: +234 805 636 0151 E-mail: ifchude@yahoo.com

APPENDIX D. Site Picture Gallery









APPENDIX E. Socio Economic Assessment Instrument

Appendix: Sample Household and Community Questionnaire

Socio-Economic Baseline Survey, Zion Garden Residence Estate Project, Awka South LGA, Anambra State

This questionnaire was administered in person to residents, traders and workers found within the project's area of influence. It takes about ten minutes to complete. No name or personal contact detail is recorded, and no photograph is taken during the exercise unless a respondent freely offers one.

Introductory note read to each respondent

Good day. We are carrying out a short survey to understand the community around the proposed Zion Garden Residence project, so that the environmental report for the project reflects the real conditions of the area. Your answers will not be linked to your name, and no picture will be taken of you during this exercise. Participation is voluntary and you may stop at any point.

Section A: Respondent Background

A1. Age range

☐ Under 18, ☐ 18 to 30, ☐ 31 to 45, ☐ 46 to 60, ☐ Above 60

A2. Gender

☐ Male, ☐ Female

A3. How long have you lived or worked in this area?

☐ Less than 1 year, ☐ 1 to 5 years, ☐ 6 to 10 years, ☐ Over 10 years

A4. What best describes your connection to this area?

☐ Resident, ☐ Business owner / trader, ☐ Worker (employed), ☐ Landlord / property owner
☐ Other, please state: _____

Section B: Livelihood and Economic Activity

B1. What is your main source of income or occupation? _____

B2. How would you describe your household's general financial situation?

☐ Comfortable, ☐ Managing, ☐ Struggling

Section C: Housing, Infrastructure and Services

C1. What is your main source of water supply?

☐ Private borehole, ☐ Public water supply, ☐ Well, ☐ Sachet or bottled water for drinking
☐ Other, please state: _____

C2. How would you describe electricity supply in this area?

☐ Fairly steady, ☐ Frequent outages, ☐ Rarely available

C3. What type of toilet facility does your household use?

☐ water closet, ☐ Pit latrine, ☐ Shared facility, ☐ Other, please state: _____

Section D: Transportation and Daily Movement**D1. How do you usually get around this area?**

☐ Walking, ☐ Private vehicle, ☐ Motorcycle / tricycle (okada / keke), ☐ Commercial bus / taxi

D2. How would you describe traffic and road conditions along this corridor?

☐ Generally free flowing, ☐ Congested at certain times, ☐ Congested most of the time

Section E: Awareness and Perception of the Proposed Project**E1. Were you aware of the proposed Zion Garden Residence project before this survey?**

☐ Yes, ☐ No

E2. How do you feel about the project being built in this area?

☐ Supportive, ☐ Neutral / no strong feeling, ☐ Concerned or opposed

E3. What, if anything, worries you about the project during construction (for example noise, dust, traffic, water access)?

E4. What, if anything, do you think this area needs most from a development like this (for example jobs, better roads, drainage)?

Section F: Consent**F1. Do you agree that your answers can be used, without your name, in the environmental report for this project?**

☐ Yes, ☐ No

F2. Are you comfortable being photographed as part of this exercise?

☐ Yes, ☐ No, please do not take my picture

Field team note: record here whether the respondent's answer to F2 was Yes or No, and honour it strictly during and after the encounter.

APPENDIX F. Construction and Operational Waste Management Plan, referenced from Section 3.10 Waste Streams and Handling Approach

Table F: Construction and Operational Waste Management Plan

Waste Category	Phase	Disposal / Reuse Route	Removal Frequency
Excavated spoil and laterite	Construction	Reused on-site as fill where possible. Surplus transported to an ASWAMA-approved dumpsite.	As generated; final removal within 14 days of earthworks completion
Concrete and masonry debris	Construction	Segregated on site. Reusable aggregate recovered. Remainder to approved disposal site.	Weekly during civil works
Timber and steel offcuts	Construction	Segregated by material. Steel salvaged and sold to scrap dealer. Timber reused on site or removed by licensed contractor.	Weekly collection; steel sold as accumulated
Packaging waste (bags, plastics, cardboard)	Construction	Segregated into covered bins. No open burning. Removed by licensed waste contractor.	Daily bin use; weekly removal
Sanitary waste from site toilets	Construction	Portable chemical toilets. Dislodged by ASWAMA-licensed tanker.	Fortnightly, or as required
Wastewater from concrete curing and mixing	Construction	Contained within site. Directed to soak pits or evaporation areas. Not discharged to drains.	Managed daily as generated
Domestic solid waste, estate residents	Operational	Stored in covered bins at plot level. Collected by an ASWAMA-licensed Private Waste Collector under written contract.	Minimum twice weekly
Domestic wastewater and sewage	Operational	Individual soak-away pits per plot, in line with Section 216(1) wastewater clearance requirements.	Continuous; pits desludged as needed
Green and garden waste	Operational	Composted on site where practical, or collected by a licensed contractor. No open burning.	Periodic, as generated
Maintenance waste (paint, lubricants)	Operational	Stored in labelled containers. Removed by a licensed hazardous waste handler.	As accumulated; quarterly disposal
Used engine oil and lubricants (generators)	Operational	Stored in sealed containers away from drains. Removed by a licensed waste oil operator.	As accumulated; quarterly

APPENDIX G. Personal Protective Equipment Requirements.

Table G: Personal Protective Equipment Requirements by Task

Task	Minimum PPE Required	Who Provides
Cement bag handling and mortar mixing	N95 dust mask, safety goggles, rubber gloves	Proponent in place before first mixing day
Block laying at first and second floor levels	Hard hat, safety footwear with toe cap	Proponent
Roofing at second-floor roof level	Hard hat, rubber-soled non-slip footwear, work gloves; no loose clothing	Proponent mandatory for every person on roof
Foundation, soakaway and catchment pit excavation	Safety footwear, work gloves	Proponent
General site work at ground level	Sturdy closed footwear toe-cap boots preferred	Each worker; proponent provides if worker cannot
Tile cutting and chiselling	Safety goggles, work gloves	Proponent
Generator fuelling	Rubber gloves; refuel only when cool and switched off	Site supervisor enforces