Environmental and Social Impact Assessment (ESIA) for Primary Health Care Facilities

Lagos State Health Infrastructure Project (LSHIP)

Epe/Ibeju-Lekki Axis (Group 5)

By

Lagos State Ministry of Health (LSMoH)
Project Implementation Unit (PIU)

Submitted to

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AXIS-BASED ESIA NOTE

The Lagos State Health Infrastructure Project (LSHIP) involves upgrading, rehabilitating, and constructing 29 Primary Healthcare (PHC) facilities across Lagos State. To ensure effective environmental and social assessment, the facilities have been clustered into eight (8) geographic axes, each with its own standalone ESIA volume.

This approach allows for:

- Detailed site-specific analysis of environmental and social risks
- Efficient regulatory review by FMEnv and LASEPA
- Clear alignment with AfDB's Integrated Safeguards System (ISS, 2024)
- Improved stakeholder engagement within each axis
- Accurate baseline data collection reflecting local conditions

The Ibeju-Lekki Axis (Group 5) comprises three PHC facilities:

Agbowa PHC

Ejirin PHC

Solu-Alade PHC

Orimedu PHC

While each axis report is independently reviewable, all eight volumes collectively form the full ESIA documentation for the LSHIP. Cross-references are provided where necessary to ensure consistency across axis, particularly for cumulative impacts, medical waste management, climate resilience, and stakeholder engagement. For the Ibeju-Lekki Axis, cumulative impact considerations are particularly relevant given the concentration of large-scale industrial developments (the Lekki Free Trade Zone, refinery and port corridor) driving rapid population growth and labour influx within the axis.

This axis-based structure ensures that environmental and social risks are assessed at the appropriate geographic scale while maintaining compliance with FMEnv Category I and AfDB Category 1 requirements.

CONSULTANT CERTIFICATION

This ESIA Report for the Lagos State Health Infrastructure Project (LSHIP) Ibeju-Lekki Axis (Group 5) has been prepared by Multiple Development Services Ltd. (MDS), supported by Natural Eco Capital, in accordance with:

- The Environmental Impact Assessment Act No. 86 of 1992 (as amended)
- FMEnv Sectoral Guidelines for Health Facilities
- Lagos State Environmental Protection Agency (LASEPA) regulations
- African Development Bank (AfDB) Integrated Safeguards System (ISS, 2024)

We hereby certify that:

1. The ESIA was conducted using accepted scientific, environmental, and social assessment methodologies.
2. Field data collection, stakeholder engagement, and baseline studies were carried out in accordance with FMEnv requirements.
3. All information presented is accurate to the best of our knowledge and based on data obtained during fieldwork, consultations, and technical analysis.

Lead ESIA Expert:

Name: _____

FMEnv Registration No.: _____

Signature: _____

Date: _____

Firm Representative (MDS):

Name: Dr. Eugene Itua

Designation: Chief Executive Officer

Signature: _____

Date: July 2026

CAVEAT

This document is issued as a Draft for Review. It is not a final ESIA and should not be cited, distributed, or used for regulatory approval. All findings, assessments, and recommendations are subject to modification based on:

- Stakeholder feedback,
- Finalisation of the Modified Ecosystems classification under AfDB OS6 (the sites are classified as Modified Ecosystems, not Critical Habitat),
- Regulatory comments from FMEnv and LASEPA, and
- Further technical validation.

Asbestos-Containing Materials (ACMs) are recognised as a known legacy material in the refurbishment facilities (Ejirin and Solu-Alade). The project will implement the standard Asbestos Management Plan (AMP) (appendix 6). No separate 'confirmation surveys' are required.

ACKNOWLEDGEMENTS

The successful completion of this Environmental and Social Impact Assessment (ESIA) for Volume 5 – Epe/Ibeju-Lekki Axis (Group 5) would not have been possible without the invaluable contributions, guidance, and support of numerous individuals and organisations.

The Lagos State Ministry of Health (LSMoH) and the Project Implementation Unit (PIU) extend their sincere gratitude to:

The Federal Ministry of Environment (FMEnv), Abuja

- For providing the regulatory framework and guidance for the ESIA process under the EIA Act CAP E12 LFN 2004.
- For the site verification and scoping workshop inputs that shaped the scope of this assessment.

The Lagos State Environmental Protection Agency (LASEPA)

- For technical guidance on state-level environmental permitting requirements.
- For access to environmental data and baseline information on air, noise, and water quality in Lagos State.

The Lagos State Waste Management Authority (LAWMA)

- For guidance on healthcare waste collection, disposal, and manifest systems.

The African Development Bank (AfDB)

- For financing the Lagos State Health Infrastructure Project (LSHIP) and providing the Integrated Safeguards System (ISS) framework.
- For the Terms of Reference (ToR) and technical support during project preparation.

The Local Government Authorities (LGAs) and Local Council Development Areas (LCDAs)

- Epe LGA and Ikosi-Ejirin LCDA (Agbowa and Ejirin PHCs)
- Ibeju-Lekki LGA and Ibeju-Lekki LCDA (Solu-Alade and Orimedu PHCs)
- For facilitating community entry, providing land tenure information, and supporting stakeholder engagement activities.

The Traditional Institutions (Obas, Baales, and Community Development Associations) of:

- Agbowa Town
- Ejirin Community
- Solu-Alade Community
- Orimedu Coastal Community

- For their warm reception, cultural guidance, and active participation in community entry meetings, focus group discussions, and key informant interviews.

The Healthcare Workers and Facility Managers of:

- Agbowa PHC
- Ejirin PHC
- Solu-Alade PHC
- Orimedu PHC
- For providing access to facilities, sharing operational challenges, and contributing to the project's design and safeguard planning.

The Community Members of Agbowa, Ejirin, Solu-Alade, and Orimedu

- For their time, patience, and willingness to share their concerns, expectations, and local knowledge of environmental and social conditions.
- For their trust in the project and commitment to improving healthcare access in their communities.

The ESIA Consulting Team – Multiple Development Services (MDS) Ltd and Natural Eco Capital Lagos

- For the rigorous fieldwork (*24–27 February 2026*), data analysis, and professional compilation of this comprehensive 10-chapter report with 14 appendices.
- For adherence to AfDB ISS, IFC Performance Standards, WHO guidelines, and Nigerian regulatory requirements.

The Laboratory Services (FMEnv-accredited)

- For analysis of soil, water, air, and asbestos samples.
- For maintaining Chain of Custody (CoC) and QA/QC protocols.

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- For anonymous technical review and constructive feedback that strengthened the quality of this ESIA.

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- **The Women's Groups and Youth Groups** of Agbowa, Ejirin, Solu-Alade, and Orimedu – For their active participation in gender-segregated FGDs and for raising awareness of GBV/SEA/SH risks and prevention strategies.

- **The Fishing and Farming Communities** of Ejirin and Orimedu – For sharing their deep knowledge of lagoon, riverine, and coastal ecosystems, which informed the biodiversity and ecosystem services assessment.
- **The Independent Environmental and Social Monitor (IESM)** – To be contracted, for future independent oversight and verification of ESMP implementation.
- **The Lagos State Ministry of Local Government and Community Affairs** – For providing directories of LGAs, LCDAs, and traditional institutions.
- **The Lagos State Ministry of Physical Planning and Urban Development** – For providing administrative maps and land use data.
- **The Nigerian Meteorological Agency (NIMET)** – For climate data and projections.
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- **The Lagos State Office for Disability Affairs (LASODA)** – For guidance on universal accessibility standards for persons with disabilities (PWDs).
- **The Lagos State Ministry of Women Affairs and Poverty Alleviation** – For GBV/SEA/SH baseline data and referral pathway coordination.

A FINAL NOTE OF APPRECIATION

This ESIA represents a collective effort to ensure that the Lagos State Health Infrastructure Project (LSHIP) delivers safe, climate-resilient, and socially responsible healthcare infrastructure for the communities of Agbowa, Ejirin, Solu-Alade, and Orimedu. The commitment of all stakeholders – from federal and state regulators to local communities – is deeply appreciated.

Any errors or omissions in this report are solely the responsibility of the preparers.

This document is issued as a Draft for Review. It is not a final ESIA and should not be cited, distributed, or used for regulatory approval. All findings, assessments, and recommendations are subject to modification based on stakeholder feedback, regulatory comments, and further technical validation.

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Table of Contents

DOCUMENT INFORMATION MATRIX 2
AXIS-BASED ESIA NOTE 3
CONSULTANT CERTIFICATION 4
CAVEAT 5
ACKNOWLEDGEMENTS 6
A FINAL NOTE OF APPRECIATION 9
List of Tables 21
List of Figures 27
List of Plates 29
List of Abbreviation 31
ESIA Team/Preparer Composition 35
Executive Summary 36
ES.1 INTRODUCTION AND PROJECT BACKGROUND 36
ES.2 PROJECT DESCRIPTION 37
ES.3 LEGAL AND INSTITUTIONAL FRAMEWORK 38
ES.4 BASELINE ENVIRONMENTAL AND SOCIAL CONDITIONS 40
ES.5 KEY ENVIRONMENTAL AND SOCIAL IMPACTS 41
ES.6 ANALYSIS OF ALTERNATIVES 43
ES.7 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) 44
ES.8 HAZARDOUS AND MEDICAL WASTE MANAGEMENT PLAN (HMWMP) 46
ES.9 GENDER-BASED VIOLENCE / SEA / SH ACTION PLAN 47
ES.10 STAKEHOLDER ENGAGEMENT AND GRIEVANCE REDRESS MECHANISM 48
ES.11 DISCLOSURE AND REPORTING 49
ES.12 CONCLUSION AND RECOMMENDATIONS 49
CHAPTER ONE – INTRODUCTION 52
1.0 Introduction 52
1.1 National and State Context 52
1.2 Geographic & Strategic Context 54
1.2.1 Project Corridor & Lagos State Coverage 54
1.2.2 Project Typology Overview 61
1.2.3 Need for ESIA Across All 29 PHC Facilities 61
1.3 Project Delivery & Key Entities 63

1.3.1 Lagos State Health Project (LSHP) -- Project Owner 63
1.3.2 African Development Bank (AfDB) -- Financier & Safeguard Authority 63
1.3.3 Environmental & Social Consultant -- Multiple Development Services (MDS) ... 64
1.3.4 Other Supporting Entities 64
1.4 -- ESIA Rationale, Objectives, And Scope 66
1.4.1 ESIA Rationale 66
1.4.2 ESIA Objectives 67
1.2.3 Project Coverage and Site Selection – Group 5 68
1.4.3 Scope of the ESIA Report 68
1.5 Regulatory Triggers, ESIA Process Flow and Guiding Principles 73
1.5.1 Regulatory Triggers 73
1.5.2 ESIA Process Flow 74
1.5.3 Guiding Principles 75
1.5.4 Field Data Gathering and Attestation 76
1.6 Policy, Legal & Institutional Framework 77
1.6.1 Nigerian Federal Framework 77
1.6.2 State-Level Environmental Permit Requirements 81
1.6.3 AfDB Operational Safeguards (OS1-OS10) 82
1.6.4 International Good Practice Standards 86
1.7 Contractor ESMS Requirements 86
1.8 Project Risk Categorisation 88
1.9 Involuntary Resettlement Integration (ESS5/PS5) 89
1.10 Climate Alignment (Paris Agreement, TCFD, Nigeria's NDC) 89
1.10.1 Climate Hazard Mapping 89
1.10.2 Adaptation Measures (Climate-Resilient Design) 90
1.10.3 Alignment with Nigeria's NDC 90
1.11 Gender, Inclusion & Vulnerability Framework 90
1.11.1 Gender Analysis & GBV Risk Screening 90
1.11.2 AfDB OS5 -- GBV/SEA/SH Compliance 91
1.12 Environmental and Social Management and Institutional Leadership 93
1.12.1 Institutional Leadership and Communication Structure 93
1.12.2 Structure of the Report 97
1.14 FMEnv Participation, ESIA Team Composition and Stakeholders Engagement 98
1.14.1 FMEnv Participation and Documentation 98

1.14.2 Stakeholder Engagement 99
1.15 Public Disclosure and Accessibility 101
1.15.1 Accessibility for Illiterate Community Members 102
1.15.2 Accessibility for Visually Impaired Persons 102
1.15.3 Accessibility for Remote and Coastal Communities (Agbowa, Ejirin, Solu-Alade, Orimedu) 102
1.15.4 Feedback Mechanism during Disclosure 102
1.15.5 Language and Translation 103
CHAPTER TWO – PROJECT JUSTIFICATION & ALTERNATIVES 104
2.1 Introduction 104
2.2 Project Justification 104
2.2.1 Deficiencies of Existing Healthcare Infrastructure 104
2.2.2 Safety Issues 107
2.2.3 Congestion 108
2.3 Strategic Need 110
2.3.1 Lagos State Development Plan 2052 – Health Sector Goals 110
2.3.2 AfDB High 5 Priorities 110
2.3.3 Sustainable Development Goals (SDGs) 111
2.4 Project Benefits 111
2.4.1 Economic Benefits 112
2.4.2 Local Business and Supply Chain Opportunities (Epe/Ibeju-Lekki Axis) 112
2.4.3 Environmental Benefits 119
2.5 Alternatives Analysis 120
2.5.1 No-Project Alternative 120
2.5.2 Site Selection Alternatives 122
2.5.3 Engineering Alternatives (Building Design) 123
2.5.4 Energy Supply Alternatives 124
2.5.5 Water Supply Alternatives 125
2.5.6 Wastewater Treatment Alternatives 126
2.5.7 Construction Alternatives 126
2.5.8 Climate Alternatives 127
2.5.9 Waste Management Alternatives 128
2.6 Climate Alignment 129
2.6.1 Nigeria's NDC Alignment 129

2.6.2 TCFD Alignment 130
2.7 Gender and Inclusion Alignment 130
2.8 Local Content and Economic Development Plan 131
2.8.1 Local Content Framework 131
2.9 Circularity And Resource Efficiency 133
2.9.1 Material Reuse and Recycling 133
2.9.2 Resource Efficiency 134
2.10 Project Alternative 135
2.10.1 No Project Alternative 135
2.10.2 Site-Specific Alternatives for Each PHC 135
2.11 Conclusion 136
CHAPTER THREE – PROJECT DESCRIPTION 139
3.1 Background and Overview 139
3.2 Project Location – Epe/Ibeju-Lekki Axis (Group 5) 140
3.2.1 Geographic Overview 140
3.2.2 Group 5 Characteristics 143
3.3 Project Particulars 145
3.3.1 New Construction Facilities (Agbowa and Orimedu PHCs) 145
3.3.2 New PHC Design Features 147
3.3.3 Site-Specific Features – New Construction 149
3.4 Project Particulars – Refurbishment (Ejirin and Solu-Alade PHCs) 149
3.5 Process Description 152
3.5.1 Pre-Construction Phase 152
3.5.2 Construction Phase – New Construction (Agbowa and Orimedu PHCs) 156
3.5.3 Construction Phase – Refurbishment (Ejirin and Solu-Alade PHCs) 157
3.6 Project Resources 159
3.6.1 Labour Requirements 159
3.6.2 Material Requirements 161
3.6.3 Equipment Requirements 165
3.7 Environmental Releases and Waste 168
3.7.1 Air Emissions 168
3.7.2 Noise 170
3.7.3 Wastewater 171
3.7.4 Solid Waste 172

3.8 Traffic Status and Forecast 174
3.8.1 Baseline Traffic 174
3.8.2 Construction Traffic Forecast 175
3.8.3 Operation Traffic Forecast 177
3.8.4 Traffic Management Plan (TMP) 178
3.9 Project Schedule 178
3.9.1 High-Level Schedule 178
3.9.2 Detailed Schedule 179
3.10 Summary 180
3.11 Community Business and Employment Opportunities -- Epe/Ibeju-Lekki Axis 181
3.11.1 Employment Opportunities 181
3.11.2 Business and Supply Chain Opportunities 181
3.11.3 Women and Youth Employment Opportunities 182
3.11.4 Community Benefits Monitoring 182
CHAPTER FOUR – BASELINE ENVIRONMENTAL AND SOCIAL CONDITIONS 184
4.1 Introduction 184
4.2 Area of Influence (AOI) 185
4.2.1 Direct Area of Influence (DAI) 185
4.2.2 Indirect Area of Influence (IAI) 187
4.2.3 Cumulative Influence Zone (CIZ) 189
4.3 Baseline Methodology 191
4.3.1 Field Surveys 191
4.3.2 Seasonal Monitoring and Baseline Completeness 193
4.3.3 Sampling Design and Site Selection 198
4.3.4 Field Data Collection Methods 200
4.3.5 Analytical Methods 204
4.3.5 Regulatory and Standards Compliance 206
4.3.6 Field Attestation and Regulatory Oversight 206
4.3.7 Limitations and Assumptions 207
4.4 Baseline Bio-Physical Environment 208
4.5 Description of Bio-Geophysical Environment 209
4.5.1 Climate and Meteorology 209
4.5.2 Geology and geomorphology of Lagos State 221
4.5.3 Ambient Air Quality and Noise Level 223

4.5.4 Ambient Air Quality 227
4.5.5 Noise Level 233
4.5.6 Groundwater Quality Results and Regulatory Compliance 236
4.5.7 Soil Quality Results and Regulatory Compliance 241
4.6 Biological Environment 247
4.6.1 Vegetation and Land Cover 247
4.6.2 Flora 248
4.6.3 Fauna 249
4.6.4 Sensitive Ecological Areas 250
4.7 Biodiversity (AFDB ISS and OS10) 251
4.7.1 Biodiversity Screening (AfDB ISS and OS5) 251
4.7.2 Ecosystem Services Assessment 254
4.8 Socio-Economic and Cultural Environment 256
4.8.1 Socio-Economic Overview of Epe/Ibeju-Lekki Axis 257
4.8.2 Socio-Economic Receptors Analysis 259
4.8.3 Human Settlements 264
4.8.3 Demographics 265
4.8.4 Livelihoods 265
4.8.5 Education, Literacy, and Skills 266
4.8.6 Social Organisations and Institutions 266
4.8.7 Gender and Social Inclusion 267
4.8.8 Household Economic Valuation and Ecosystem Dependence 268
4.8.9 Security, Conflict, and Social Stability 268
4.8.10 Land Tenure and Ownership 269
4.8.11 Resettlement Baseline (AfDB OS5) 270
4.8.12 Social Services, OHS and Waste Management 270
4.8.13 Cultural Heritage 274
4.8.14 Vulnerable Groups (AfDB OS7 / IFC PS7) 276
4.8.15 GBV/SEA/SH Baseline 277
4.9 Climate Baseline 278
4.9.1 Historical Climate (1990–2024) 278
4.9.2 Climate Hazard Mapping (Current) 279
4.9.3 Future Climate Projections (2050, RCP 8.5) 280
4.10 Indigenous Peoples Screening 281

4.11 Summary of Socio-Economic Baseline Findings 283
CHAPTER FIVE – ASSOCIATED AND POTENTIAL ENVIRONMENTAL IMPACTS . 285
5.1 Introduction 285
5.2 Methodology 285
5.2.1 Impact Identification Tools 286
5.2.2 Impact Significance Rating 287
5.2.3 Project Phases Considered 289
5.3 Detailed Impact Assessment (Unmitigated Scenario) 289
5.3.1 Pre-construction Phase Impacts 289
5.3.2 Construction Phase Impacts 290
5.3.4 Decommissioning Phase Impacts 299
5.4 Site-Specific Impact Significance Matrix (Unmitigated Scenario) 301
5.4.1 Agbowa – Site-Specific Impact Matrix 301
5.4.2 Solu-Alade – Site-Specific Impact Matrix 302
5.4.3 Ejirin – Site-Specific Impact Matrix 302
5.5 Detailed Impact Assessment 303
5.5.1 Physical Environment Impacts 303
5.5.2 Biological Environment Impacts 315
5.5.3 Socio-Economic Impacts 318
5.5.4 Cumulative Impacts 326
5.5.5 Climate Change Impacts on the Project 331
5.6 Unmitigated Risk Assessment (Worst-Case Scenarios) 333
5.7 Conclusion 335
CHAPTER SIX – MITIGATION MEASURES 337
6.1 Introduction 337
6.2 Site-Specific Mitigation Measures 337
6.2.1 SOLU-ALADE -- Site-Specific Mitigation Measures 337
6.2.2 ORIMEDU -- Site-Specific Mitigation Measures 338
6.2.3 AGBOWA -- Site-Specific Mitigation Measures 339
6.2.4 EJIRIN -- Site-Specific Mitigation Measures 340
6.3 Public Health Impact - Baseline, Impacts, Mitigation Measures, and Monitoring Indicators 341
6.3.1 Agbowa PHC & Orimedu PHC (During construction Phase) 342
6.3.2 Ejirin PHC & Solu-Alade PHC (during Renovation) 343

6.3.3 Operations Phase - Primary Healthcare Centres (Agbowa, Ejirin, Solu-Alade, Orimedu) 345
CHAPTER 7 – ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP) 350
7.1 General Introduction (Final Refined Version) 350
7.2 Site-Specific ESMPs for the Four PHC Sites 350
7.2.1 Agbowa – Site-Specific ESMP 351
7.2.2 Solu-Alade – Site-Specific ESMP 353
7.2.3 Ejirin – Site-Specific ESMP 354
7.3 ESMP Summary Matrix (Epe/Ibeju-Lekki Axis) 355
7.4 Institutional Responsibilities 356
7.5.1 Institutional Framework Overview 356
7.5.2 Detailed Roles and Responsibilities 357
7.5 Monitoring Plan 358
7.6.1 Monitoring Indicators 358
7.6.2 Monitoring Locations 359
7.6.3 Corrective Action Procedure 359
7.6 Environmental & Social Management Actions 364
7.6.1 Biophysical Management Actions 364
7.6.2 Social Management Actions 364
7.6.3 Health & Safety Management Actions 365
7.7 Stakeholder Engagement & GRM 365
7.7.1 Stakeholder Engagement 365
7.7.2 Grievance Redress Mechanism (GRM) 365
7.8 Capacity Building & Training 365
7.9 Reporting Framework 366
7.10 Emergency Preparedness And Response Plan (EPRP) 366
7.10.1 Emergency Scenarios 366
7.10.2 Emergency Response Procedures 368
7.10.3 Emergency Equipment and Supplies 370
7.10.4 Emergency Drills 371
7.11 ESMP Review and Update Mechanism 373
7.11.1 Review Triggers 373
7.11.2 Review Process 373
7.11.3 Version Control 375

7.11 ESMP Budget & Implementation Schedule 375
7.11.1 Site-Specific ESMP Budget Breakdown 375
7.11.2 Site-Specific Budget Summary 377
7.11.3 Site-Specific Justification for Budget Variations 378
7.11.4 Implementation Schedule 378
7.11.5 Budget Verification Statement 379
7.11.6 Total Estimated ESMP Cost 381
7.12 Contractor ESMS Requirements 381
7.12.1 Contractor ESMP (C-ESMP) 381
7.12.2 Contractor ESMP (C-ESMP) Approval Process 382
7.12.3 Contractor E&S Performance Monitoring 383
7.12.4 Sanctions for Contractor Non-Compliance 384
7.13 Conclusion 384
CHAPTER EIGHT – DECOMMISSIONING AND ABANDONMENT 386
8.1 Introduction 386
8.2 Decommissioning And Abandonment Principles 387
8.3 Planned Decommissioning (End-Of-Life) 388
8.3.1 Decommissioning Activities (Sequential) 388
8.4 Unplanned Abandonment (Premature Closure) 393
8.4.1 Abandonment Triggers 393
8.4.3 Abandonment Funding 395
8.5 Climate and Environmental Considerations During Decommissioning 396
8.6 Community and Stakeholder Engagement During Decommissioning Or Abandonment 397
8.7 Health and Safety During Decommissioning Or Abandonment 398
8.8 Decommissioning and Abandonment Budget (Indicative) 398
8.9 Record Keeping and Reporting 399
8.10 Regulatory Compliance Summary 399
8.11 Conclusion 400
CHAPTER 9 – SITE-SPECIFIC GBV/SEA/SH ACTION PLAN 402
9.1 Introduction 402
9.2 Legal and Policy Framework 402
9.3 GBV/SEA/SH Risk Assessment 402
9.4 Prevention Measures 403

9.5 Response Measures 404
9.6 Sanctions for Violations 404
9.7 Monitoring & Evaluation 405
9.8 Roles & Responsibilities 405
9.9 GBV/SEA/SH Summary Matrix 405
9.10 Budget Estimate 407
9.11 Stakeholder Engagement, Consultation & GRM 407
9.11.1 Stakeholder Engagement Process 407
9.11.2 Grievance Redress Mechanism (GRM) 410
9.11.3 GRM Cost Estimate 413
9.12 Conclusion 413
CHAPTER TEN – CONCLUSION AND RECOMMENDATIONS 414
10.1 Introduction 414
10.2 Summary of Key Findings 414
10.2.1 Project Description 414
10.2.2 Baseline Conditions 414
10.2.3 Impact Assessment 416
10.2.4 Mitigation Measures 418
10.2.5 Environmental and Social Management Plan (ESMP) 419
10.2.6 Decommissioning and Abandonment 419
10.3 Residual Impacts 420
10.4 Recommendations 421
10.4.1 Recommendations for Project Implementation 421
10.4.2 Recommendations for Monitoring and Adaptive Management 423
10.4.3 Recommendations for Lender Approval (AfDB) 424
10.5 Conclusion 424
REFERENCES 427
APPENDICES 432
Appendix 1.1: Terms of Reference (AfDB) 432
Appendix 1.2: Project Risk Categorization 433
Appendix 1.3 FMEnv's statutory participation in the ESIA process 435
Appendix 2: Proposed Project Sites 436
Appendix 2.2: Borrow Pit Management Plan (BPMP) 438
Appendix 2.3: LSHIIP Campsite Management Plan 440

Appendix 2.4: LSHIP Generic Labour Influx Management Plan (LIMP) 442
Appendix 2.5: LSHIP Generic CASHES Plan 444
Appendix 2.6: LSHIP Generic Supply Chain Risk Assessment 446
Appendix 3: Chain-of-Custody Forms (Refined & on-Ready) 448
Appendix 4: FMEnv-accredited laboratory 451
Appendix 5: Summary of Baseline Laboratory Results 453
Appendix 6 Asbestos Management Plan (AMP) 459
Appendix 7 -- Stakeholder Engagement Evidence Package 464
Appendix 8: Attendance Sheet 470
Appendix 9:Pictures of Stakeholders Engagement 472
Appendix 10: FMEnv Field Attestation Register 474
Appendix 11: Traffic Management Plan (TMP) 477
Appendix 12: Laboratory QA/QC Documentation 479
Appendix 13 – Code of Conduct for Gender-Based Violence (Full Text) 480
Appendix 14 – General Environmental Management Conditions for Construction Contracts 483
Appendix 15 – Socio-Economic Data Collection Instruments 495
Appendix 16: Chance Finds Procedure (CFP) 509

List of Tables

Table 1.1: Geographical Clusters for the 29 LSHIP Project Sites……..54
Table 1.2: Geographical Clusters for the 29 LSHIP Project Sites …….…. 55
Table 1.3: Regulatory Triggers Applicable to the Ibeju Lekki……..…..74
Table 1.4 -- Nigerian Federal Regulatory Framework……...78
Table 1.5 -- State Level Environmental Permit Requirements……..82
Table 1.6: AfDB ISS 2023/2024 Compliance Mapping (Site-Specific Triggers) …….83
Table 1.7 -- Climate Hazard Mapping……. 90
Table 1.8: LSHIP Alignment with AfDB OS5 GBV/SEA/SH Requirements……..93
Table 1.9 -- Gender and Inclusion Indicators……93
Table 1.10: the project governance structure……94
Table 1.11: Communication Channels for Environmental and Social Management…….97
Table 1.12: community liaison structure……...97
Table 2.1: Summary of Site Specific Deficiencies by Cluster……106
Table 2.2: Mitigation Measures for Key Safety Issues……108
Table 2.3: Contribution to LSDP 2052 Health Sector Goals by Cluster (Group 5 highlighted)…….. ……..110
Table 2.4: Alignment with Sustainable Development Goals……...111
Table 2.5: Economic Benefits of the LSHIP Programme……112
Table 2.6: Local Material Supply Opportunities…….……112
Table 2.7: Business and Contractual Opportunities……113
Table 2.8: Local Content Targets (Epe/Ibeju-Lekki Axis)……..113
Table 2.9: Local Business Support Measures…….114
Table 2.10: Economic Multiplier Effect……..114
Table 2.11: Epe/Ibeju-Lekki Axis Site-Specific Local Business Opportunities…….….115
Table 2.12: Social Benefits Matrix……..117
Table 2.13: Social Benefits …….118
Table 2.14: Environmental Benefits Matrix……120
Table 2.15: Environmental Benefits (LSHIP Programme)…….120
Table 2.16: Site Selection Alternatives for Group 5……122
Table 2.17: Technical Selection Criteria for Site Selection…….122
Table 2.18: Engineering Alternatives for Building Design…….123
Table 2.20: Water Supply Alternatives……124
Table 2.19: Energy Supply Alternatives……..……125

Table 2.21: Wastewater Treatment Alternatives……126
Table 2.22: Construction Alternatives……126
Table 2.23 Climate Adaptation Alternatives……...127
Table 2.24: Waste Management Alternatives……..128
Table 2.25: Climate Resilience Features for Group 5……129
Table 2.26: TCFD Alignment of the LSHIP……130
Table 2.27: GBV Risk for Group 5……..130
Table 2.28: Local Content Framework -- Epe/Ibeju-Lekki Axis (Group 5)……131
Table 2.29: Implementation Arrangements -- Epe/Ibeju-Lekki Axis (Group 5)…….132
Table 2.30: Monitoring Indicators -- Epe/Ibeju-Lekki Axis (Group 5)……...132
Table 2.31: Material Reuse and Recycling Potential……..133
Table 2.32: Resource Efficiency Measures and Savings……134
Table 3.1: Project Component and Intervention Mapping – Group 5……139
Table 3.2: Site Locations and Geographic Context – Group 5……...141
Table 3.3: Site Details – Group 5 (Epe/Ibeju-Lekki Axis)……..142
Table 3.4: New Construction Facilities – Group 5……..146
Table 3.5: PHC Design Features (Agbowa and Orimedu PHCs)……147
Table 3.6: Refurbishment Facilities – Group 5……149
Table 3.7: Refurbishment Scope by Activity……...150
Table 3.8: Site Specific Sensitivities – Refurbishment……150
Table 3.9: Pre Construction Activities for Group 5……152
Table 3.10: Construction Activities for New Construction Sites……156
Table 3.11: Construction Activities for Refurbishment Sites……..158
Table 3.12: Labour Requirements by Category – Group 5……159
Table 3.13: Material Requirements – Group 5……161
Table 3.14: Equipment Requirements – Group 5……165
Table 3.15: Air Emission Sources and Mitigation……..168
Table 3.16: Noise Sources and Levels……170
Table 3.17: Wastewater Sources and Management……171
Table 3.18: Solid Waste Types and Management……172
Table 3.19: Baseline Traffic by Site……174
Table 3.21: Operation Traffic Forecast……177
Table 3.20: Construction Traffic Forecast……...175
Table 3.22: High Level Project Schedule – Group 5……...….178

Table 3.23: Detailed Project schedule Gantt chart (Typical PHC – 12 months)……..…179
Table 3.24: Employment Opportunities -- Epe/Ibeju-Lekki Axis……181
Table 3.25: Business and Supply Chain Opportunities -- Epe/Ibeju-Lekki Axis…….…..181
Table 3.26: Women and Youth Employment Targets -- Epe/Ibeju-Lekki Axis……..……182
Table 3.27: Community Benefits Monitoring Indicators -- Epe/Ibeju-Lekki Axis……182
Table 4.1: Direct Area of Influence (DAI) – Group 5……185
Table 4.2: Communities and Ecological Zones within 1 km Buffer of Each Site…..……187
Table 4.3: CIZ Receptor Sensitivity. ……..……191
Table 4.4: Survey and Sampling Coverage (Epe/Ibeju-Lekki Axis)……...…….192
Table 4.5: Analytical Methods for Water Quality Parameters……..…….…….204
Table 4.6: Average Weather Trend for Lagos State (1985-2024)……211
Table 4.7: Monthly Wind Data of Lagos State (1988-2024)……213
Table 4.8: Geology and Geomorphology of Agbowa, Ejirin, Solu Alade, and Orimedu PHCs……...……221
Table 4.9: Hydrology and Drainage of Agbowa, Ejirin, Solu Alade and Orimedu PHCs (Lagos Coastal Zone) ……222
Table 4.10: List of the Measured Parameters for Air Quality and Equipment Used….……224
Table 4.11: Regulatory Limit Summary Table (Air Quality Parameters)…….…….229
Table 4.12: Ambient Air Quality Measured at the Study Area with Regulatory Limits.……231
Table 4.13: Regulatory Limit Summary Table (Noise Parameter)…….……233
Table 4.14: Noise Level Measured at the Study Area with Regulatory Limit……..….233
Table 4.15: Complete Analytical Results with Standards……...…237
Table 4.16: Complete Analytical Results with Standards……..……242
Table 4.17: Vegetation and Land Cover – Group 5 (Dry Season Observation)…….……247
Table 4.18: Flora – Group 5 (Dry Season Observation)……248
Table 4.19: Fauna – Group 5 (Dry Season Observation)……249
Table 4.20: Sensitive Ecological Areas – Group 5……..250
Table 4.21: AfDB OS10 Biodiversity Screening Matrix – Group 5……..252
Table 4.22: AfDB OS10 Biodiversity Screening by Site – Group 5……...…252
Table 4.23: Ecosystem Services Assessment – Group 5……255
Table 4.24: Comparative Socio-Economic Baseline – Project-Affected Communities ……258
Table 4.25: Livelihood Receptors by Community……260
Table 4.26: Community Infrastructure Receptors……...…260
Table 4.27: Vulnerable Groups and Sensitivity Drivers……261

Table 4.28: Environmental Resource Receptors……..……261
Table 4.29: Social and Cultural Institution Receptors…….…….262
Table 4.30: Summary of Socio-Economic Receptor Sensitivity……..262
Table 4.31: Community Sensitivity Ranking – Epe/Ibeju-Lekki Axis…….263
Table 4.32: Human Settlements – Group 5……...264
Table 4.33: Demographics – Epe/Ibeju Lekki Axis (estimated) ……..265
Table 4.34: Livelihoods and sources of income – Group 5……...265
Table 4.35: Land Tenure and Ownership……..……269
Table 4.36: Social Services Baseline……..271
Table 4.37a: Occupational Health & Safety Baseline……272
Table 4.37b: Waste Stream Baseline……..273
Table 4.38: Cultural Heritage Assets and Mitigation…….274
Table 4.39: Key GBV Risk Factors……277
Table 4.40: GBV Risk Rating by Site……278
Table 4.41: Historical Climate Trends (1990–2024) – Lagos State……278
Table 4.42: Climate Hazard Exposure by Site – Group 5 (Current)……..279
Table 4.43: Future Climate Projections (2050, RCP 8.5) – Lagos State……...…….280
Table 4.44: Climate Hazard Exposure by Site – Group 5 (2050 Projection, RCP 8.5)..…….280
Table 4.45: AfDB ISS OS Screening Matrix – Epe/Ibeju-Lekki Axis…….……281
Table 5.1: Baseline Receptors Identified in Chapter 4……...286
Table 5.2: Impact Identification Tools – Group 5…….....286
Table 5.3: Impact Characteristics – Magnitude, Duration, Extent, Likelihood……..……287
Table 5.4: Receptor Sensitivity – Group 5…….…….288
Table 5.5: Impact Significance Rating Matrix……...……..288
Table 5.6: Significance Definitions and Required Actions……..……289
Table 5.7: Project Phases Considered – Group 5…….289
Table 5.8: Unmitigated Environmental and Social Impacts – Pre Construction Phase…..…290
Table 5.9: Unmitigated Environmental and Social Impacts – Construction Phase…….292
Table 5.10: Unmitigated Environmental and Social Impacts – Operation Phase……..…..…298
Table 5.11: Unmitigated Environmental and Social Impacts – Decommissioning Phase.….299
Table 5.12: Air Quality Impacts (Unmitigated) – Group 5…….303
Table 5.13: Noise and Vibration Impacts (Unmitigated) – Group 5……305
Table 5.14: Soil Erosion and Sedimentation Impacts (Unmitigated) – Group 5…….306
Table 5.15: Groundwater Quality Impacts (Unmitigated) – Group 5……..308

Table 5.16: Flooding and Drainage Disruption Impacts (Unmitigated) – Group 5……..311
Table 5.17: Waste Generation Impacts (Unmitigated) – Group 5……..……..312
Table 5.18: Vegetation and Habitat Loss Impacts (Unmitigated) – Group 5……315
Table 5.19: Fauna Impacts (Unmitigated) – Group 5……...316
Table 5.20: Biodiversity and Critical Habitat Impacts (Unmitigated) – Group 5……..…317
Table 5.21: Land Acquisition and Resettlement Impacts (Unmitigated) – Group 5……..…318
Table 5.22: Livelihoods and Economic Activities Impacts (Unmitigated) – Group 5……..319
Table 5.23: Community Health and Safety Impacts (Unmitigated) – Group 5……..……...320
Table 5.24: Labour and Working Conditions Impacts (Unmitigated) – Group 5……..……321
Table 5.25: GBV/SEA/SH Impacts (Unmitigated) – Group 5……..……324
Table 5.26: Cultural Heritage Impacts (Unmitigated) – Group 5……..……325
Table 5.27: Cumulative Impact Hotspots – Group 5……..……326
Table 5.28: Cumulative Health Impacts – Group 5……..……329
Table 5.29: Climate Vulnerability Assessment (Unmitigated) – Group 5……..……...331
Table 5.30: Worst Case Environmental Scenarios – Group 5……..…..333
Table 5.31: Worst Case Social Scenarios – Group 5……..……..…334
Table 7.1 -- Environmental & Social Monitoring Matrix (Four Phc Sites)……...….360
Table 7.2 – Emergency Scenarios (Epe / Ibeju-Lekki Axis)……..……..…366
Table 7.3 – Emergency Equipment and Supplies (Epe / Ibeju-Lekki Axis – per site)…..…..370
Table 7.4 – Emergency Drills (Epe / Ibeju-Lekki Axis)……..……..……...371
Table 7.5 – Emergency Contact List (Example – Epe / Ibeju-Lekki Axis)……..……372
Table 7.6: Review Triggers……..……..……..……..373
Table 7.7: Review Process……..……..……373
Table 7.8 Version Control……..…..……375
Table 7.9A: Site-Specific ESMP Budget Breakdown by Component……..……..….375
Table 7.9B: Site-Specific ESMP Budget Summary……..……..….377
Table 7.9C: ESMP Implementation Schedule by Phase……..……..……..378
Table 8.1: Decommissioning and Abandonment Scenarios – Group 5……..……386
Table 8.2: Regulatory Basis. ……..…387
Table 8.3: Decommissioning and Abandonment Principles – Group 5……..……387
Table 8.4: Pre decommissioning Activities – Group 5……..…….388
Table 8.5: Hazardous Material Removal – Group 5……..…….389
Table 8.6: Salvage and Reuse – Group 5…..……..……389
Table 8.7: Demolition Activities – Group 5……..390

Table 8.8: Decommissioning Waste Management – Group 5……...390
Table 8.9: Site Restoration Activities – Group 5……..……..…391
Table 8.10: Final Environmental Sampling and Closure – Group 5……..……...392
Table 8.11: Land Handover – Group 5…….……392
Table 8.12: Abandonment Triggers – Group 5…….…….……393
Table 8.13: Immediate Safety Response – Group 5…….…….……394
Table 8.14: Damage and Risk Assessment – Group 5…….…….…….394
Table 8.15: Abandonment Execution Options – Group 5……...……..394
Table 8.16: Abandonment Funding Sources – Group 5……...……395
Table 8.17: Climate and Environmental Mitigation during Decommissioning – Group 5…….……396
Table 8.18: Community Engagement during Decommissioning or Abandonment – Group 5 ……..……..…397
Table 8.19: Health and Safety Measures during Decommissioning or Abandonment – Group 5…….…...….398
Table 8.20: Decommissioning and Abandonment Budget (Indicative) – Group 5 (per PHC) …….…….398
Table 8.21: Decommissioning Record Keeping – Group 5…….…….399
Table 8.22: Regulatory Compliance Summary – Decommissioning and Abandonment…...399
Table 9.1: Facility Summary: Group 5……
Table 9.2: Groups and Identified Stakeholders……..
Table 9.3: Stakeholder Concerns & Perception……..
Table 9.4: Needs and Mitigation/Design Implementation……..
Table 9.5 – GBV Risk Factors Identified in the Agbowa, Ejirin, Solu-Alade, and Orimedu PHCs.. ……..…402
Table 10.1: Summary of Baseline Findings – Group 5…….……414
Table 10.2: Summary of Key Impacts (Unmitigated) – Group 5……..416
Table 10.3: Key Mitigation Measures by Category – Group 5…….418
Table 10.5: Implementation Recommendations – Group 5……...420
Table 10.4: Residual Impacts – Group 5…….……...421
Table 10.6: Monitoring and Adaptive Management Recommendations – Group 5……..….423
Table 10.7: Recommendations for AfDB Approval – Group 5…….……424

List of Figures

Figure 1.1: Map of Nigeria Highlighting Lagos State…… ……58
Figure 1.2 -- Map of Lagos State Showing the 20 LGAs and 29 Project Sites……...58
Figure 1.3a - Agbowa PHC Sampling Map……..59
Figure 1.3b - Ejirin PHC Sampling Map…….…….59
Figure 1.3c - Solu Alade PHC Sampling Map…….…….60
Figure 1.3d- Orimedu PHC Sampling Map…….……..60
Figure 1.4: Project Typology Overview……61
Figure 1.5: LSHIP Institutional Framework and Communication Structure……65
Figure 1.6 – Map showing location of the four project sites by Cluster ……..69
Figure 1.7: GIS Integrated Development Map and Project Dashboard for Ibeju Lekki/ Epe..71
Figure 1.8: Scope for the Ibeju Lekki/ Epe Cluster…….…....73
Figure 1.9: ESIA Process Flowchart…….……75
Figure 1.10: Assessment and Management of Environmental & Social Risks ……...86
Figure 1.11: Contractor Compliance Requirements for ESMS Components……...87
Figure 1.12 -- Map of climate hazards (flooding, erosion, coastal inundation)……90
Figure 1.13 -- Gender and vulnerability map……91
Figure 3.1: Project phase…….140
Figure 3.2: Map of Epe/Ibeju-Lekki Axis (Group 5) Showing All 4 Project Sites……..141
Figure 3.3: Detailed Map of Group 5 (Epe/Ibeju-Lekki Axis) Showing Topography, Wetlands, ……...145
Figure 3.4: Picture of the Prototype of the Proposed PHCs for Construction……146
Figure 3.5: Typical Floor Plan of New PHC (Prototype Design)……148
Figure 3.6: 3D Rendering of Typical New PHC (Exterior)……149
Figure 3.7: Pre Construction Process Flowchart (Group 5)……155
Figure 3.8: Construction Phase Process Flowchart (Group 5)……159
Figure 3.9 -- Project schedule Gantt chart (Epe/Ibeju Lekki -- all 4 sites) …….180
Figure 4.1: Map showing DAI boundaries for Epe/Ibeju-Lekki Axis sites…….181
Figure 4.2 -- Cumulative influence zone map (Ibeju Lekki/ Epe)……...189
Figure 4.3 -- Climate hazard map (Ibeju Lekki) …...……..209
Figure 4.4: Rainfall Pattern in the Study Area……212
Figure 4.5: Average Temperature in the Study Area……..213
Figure 4.6: Prevailing Wind Direction in the Proposed Project Area…….217
Figure 4.7: Average Relative Humidity in the Study Area……..218

Figure 4.8: Monthly Average Sunshine Hours in the Study Area……219
Figure 4.9: Cloud Cover in the Study Area……220
Figure 4.10: Average Pressure in the Study Area……221
Figure 4.11: Land cover classification map (Sentinel 2) ……248
Figure 4.12: Map showing farmland, water sources, fishing zones, wetlands, coastal areas, and LSHIP sites……256
Figure 4.13: Settlement map and population data……..264
Figure 4.14: Climate hazard exposure map showing flood prone zones……281
Figure 7.1: ESMP Implementation Flowchart – Group 5……375
Figure 8.1: Planned Decommissioning Process Flowchart – Group 5……393
Figure 8.2: Unplanned Abandonment Response Flowchart – Group 5……...396

List of Plates

Plate 1.1: Collage of Photographs Showing Engagement with Regulators and Stakeholders during the ESIA Exercises from 1-9 April, 2026……..101
Plate 3.1: Agbowa PHC – existing site condition……151
Plate 3.2: Orimedu PHC – existing site condition……..152
Plate 3.3: Ejirin PHC (before refurbishment) ……152
Plate 4.1: Soil Sample collection with soil auger……200
Plate 4.2: Geographical Positioning System (GPS): For obtaining the geographical coordinates of locations. ……226
Plate 4.3: Kestrel: For measuring meteorological parameters (temperature, wind speed, humidity, barometric pressure etc) ……226
Plate 4.4: Sound level meter: is used to measure sound pressure levels in a given environment ……226
Plate 4.5: Aeroqual Gas Sensing: For measuring Particulate Matters (PM2.5 & PM10), CO, VOC, NO2 & O3……226
Plate 4.6: Aeroqual Sensor Heads……...226
Plate 4.7: Components of the Aeroqual 500 series Monitor……...227
Plate 4.8: Coconut trees at Coastal Area of Epe-Ibeju Lekki Axis……..249

List of Abbreviation

Abbreviation	Expanded Form
AfDB	African Development Bank
BSL3 / BSL4	Biosafety Level 3 / Biosafety Level 4
CDA	Community Development Association
CLO	Community Liaison Officer
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
FMEnv	Federal Ministry of Environment
HEFAMAA	Health Facility Monitoring and Accreditation Agency
IBA	Important Bird Area
IESM	Independent Environmental and Social Monitor
IFC	International Finance Corporation
IL&FS / ILO	International Labour Organization
IRM	Independent Recourse Mechanism
ISS	Integrated Safeguards System
LASM	Lagos State Museum
LASODA	Lagos State Office for Disability Affairs
LASEPA	Lagos State Environmental Protection Agency
LASWARCO	Lagos State Water Regulatory Commission
LAWMA	Lagos State Waste Management Authority
LCDA	Local Council Development Area
LGA	Local Government Area
LSDP	Lagos State Development Plan
LSHIP	Lagos State Health Infrastructure Project
LSHP	Lagos State Health Project
LSMoH	Lagos State Ministry of Health
LSSC	Lagos State Safety Commission
MDS	Multiple Development Services (Ltd)
NCDC	Nigeria Centre for Disease Control

NCF	Nigerian Conservation Foundation
NDC	Nationally Determined Contribution
NESREA	National Environmental Standards and Regulations Enforcement Agency
NGSA	Nigerian Geological Survey Agency
NIMET	Nigerian Meteorological Agency
NPHCDA	National Primary Health Care Development Agency
NSITF	Nigeria Social Insurance Trust Fund
ACM	Asbestos-Containing Material
BOD	Biochemical Oxygen Demand
CFU	Colony Forming Units
CO	Carbon Monoxide
CoC	Chain of Custody
E&S	Environmental and Social
EHS	Environment, Health, and Safety
EPRP	Emergency Preparedness and Response Plan
GHG	Greenhouse Gas
GIS	Geographic Information System
HMWMP	Hazardous and Medical Waste Management Plan
MEP	Mechanical, Electrical, and Plumbing
NO_2	Nitrogen Dioxide
OS	Operational Safeguard (AfDB)
PEP	Post-Exposure Prophylaxis
$PM_{2.5}$ / PM_{10}	Particulate Matter ($2.5\mu m$ / $10\mu m$)
PS	Performance Standard (IFC)
QA/QC	Quality Assurance / Quality Control
RCP	Representative Concentration Pathway
SO_2	Sulfur Dioxide
tCO_2e	Tonnes of Carbon Dioxide Equivalent
TCFD	Task Force on Climate-related Financial Disclosures
TMP	Traffic Management Plan
CESMP	Contractor Environmental and Social Management Plan
EMR	Electronic Medical Records

GBV	Gender-Based Violence
GRM	Grievance Redress Mechanism
IPC	Infection Prevention and Control
MCH	Maternal and Child Health
NHMIS	National Health Management Information System
OHS	Occupational Health and Safety
PAP	Project-Affected Person
PHC	Primary Healthcare Centre
PIU	Project Implementation Unit
PMU	Project Management Unit
PPE	Personal Protective Equipment
PWD	Person with Disability
RAP	Resettlement Action Plan
SEA	Sexual Exploitation and Abuse
SEP	Stakeholder Engagement Plan
SH	Sexual Harassment
UHC	Universal Health Coverage
UNGP	United Nations Guiding Principles (on Business and Human Rights)
VPSHR	Voluntary Principles on Security and Human Rights
WASH	Water, Sanitation, and Hygiene
WHO	World Health Organization

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Executive Summary

ES.1 INTRODUCTION AND PROJECT BACKGROUND

ES.1.1 Project Overview

The Lagos State Health Infrastructure Project (LSHIP) is a US$200 million health system strengthening programme implemented by the Lagos State Ministry of Health (LSMoH) with financing from the African Development Bank (AfDB). The initiative aims to modernise, expand, and climate-proof healthcare infrastructure across Lagos State through the construction of 11 new Primary Healthcare Centres (PHCs), refurbishment of 19 existing PHCs, and the development of secondary and tertiary healthcare facilities.

This Environmental and Social Impact Assessment (ESIA) addresses Group 5 -- Epe/Ibeju-Lekki Axis, comprising four (4) PHC facilities located in the Epe and Ibeju-Lekki LGAs and their environs:

PHC Facility	Location	Project Type
Agbowa PHC	Epe (Ikosi-Ejirin LCDA)	New Construction
Ejirin PHC	Epe (Ikosi-Ejirin LCDA)	Refurbishment
Solu-Alade PHC	Ibeju-Lekki (Ibeju-Lekki LCDA)	Refurbishment
Orimedu PHC	Ibeju-Lekki (Ibeju-Lekki LCDA)	New Construction

ES.1.2 Project Rationale

The Epe/Ibeju-Lekki corridor is a rapidly urbanising zone influenced by major economic developments, leading to a significant population influx and high demand for healthcare. Existing PHCs face infrastructural deficits including structural deterioration, lack of reliable power, inadequate water supply, poor waste management systems, and suspected asbestos-containing materials at Solu-Alade PHC. The project directly responds to these deficits by:

- Improving access to quality primary healthcare for low-income and vulnerable populations
- Upgrading structural integrity, water supply, sanitation, and waste management systems
- Ensuring continuity of essential health services during and after construction
- Strengthening climate resilience through green building design and solar PV systems

ES.1.3 Project Classification

The LSHIP is classified as:

- AfDB Category 1 (High Risk) under the Integrated Safeguards System (ISS) -- requiring a full ESIA

- FMEnv Category I under the EIA Act CAP E12 LFN 2004 -- requiring a full ESIA

This classification reflects the project's multi-site footprint, presence of hazardous materials (asbestos), proximity to sensitive coastal and wetland ecosystems, and the scale of construction activities.

ES.1.4 ESIA Objectives

The overarching objective of this ESIA is to serve as the principal due diligence instrument for the LSHIP. Specifically, this report:

- Establishes comprehensive baseline conditions for the four PHC sites
- Identifies and assesses all potential environmental and social impacts
- Develops clear, actionable, site-specific mitigation measures
- Prepares safeguard instruments including ESMPs, HMWMP, and GBV Action Plan
- Demonstrates full compliance with AfDB ISS, FMEnv EIA Act, and international good practice
- Supports informed decision-making by regulators, financiers, and stakeholders

ES.1.5 Facility Typology and Scope of Assessment

The scope of this ESIA reflects both the AfDB Category 1 programme classification and the specific typology of the Group 5 facilities. While the Lagos State Health Infrastructure Project has been designated Category 1 due to its statewide footprint and cumulative considerations, the individual facilities assessed in this Group—Agbowa (new construction), Ejirin (refurbishment), Solu-Alade (refurbishment), and Orimedu (new construction)—are small rural Primary Healthcare Centres with modest service footprints and basic infrastructure.

These PHCs do not generate the scale or complexity of environmental pressures typically associated with general hospitals or large medical facilities. Accordingly, the baseline parameters and impact pathways relevant to these sites are inherently limited, and the level of analysis applied at the facility level is proportionate to their operational realities. The ESIA therefore maintains Category 1 rigour while tailoring the depth of assessment to the specific, context-appropriate risks associated with small rural PHCs undergoing new construction or refurbishment.

This ESIA has been prepared in accordance with AfDB's Integrated Safeguards System and is consistent with internationally recognised environmental assessment practices, including methodologies commonly applied by the U.S. Environmental Protection Agency (EPA), ensuring that the analysis and documentation meet globally accepted technical standards.

ES.2 PROJECT DESCRIPTION

ES.2.1 Project Components -- Epe/Ibeju-Lekki Axis

The Epe/Ibeju-Lekki Axis comprises:

Component	Description
New Construction	Two (2) new PHCs at Agbowa and Orimedu
Refurbishment	Two (2) existing PHCs upgraded at Ejirin and Solu-Alade
Infrastructure	Solar PV systems, boreholes, septic tanks, and medical waste treatment facilities
Access Improvements	Upgraded access roads and drainage within PHC premises

ES.2.2 Design Features

All facilities incorporate climate-resilient green building design, including:

- Solar PV systems with battery storage (24--48 hours backup)
- Rainwater harvesting (5,000--10,000 L storage per PHC)
- Cool roofs and natural ventilation
- Disability-friendly design (ramps, wide doorways, accessible toilets)
- Oversized drainage designed for 1:100-year storm + 30% climate factor

ES.2.3 Project Phases

Phase	Duration	Key Activities
Pre-construction	6--12 months	Asbestos surveys (Solu-Alade), design, permitting, contractor procurement
Construction	12--24 months	Earthworks, building works, MEP installation, equipment installation
Operation	50+ years	Routine outpatient, maternal/child health, immunisation, laboratory services

ES.2.4 Project Resources

Resource	Estimated Quantity	Sourcing
Labour (peak)	110--135 workers	≥50% local hiring (within LGAs)
Cement	Local sourcing	≥60% local sourcing
Sand and Gravel	Local sourcing	≥80% local sourcing
Steel	Nigerian mills	≥40% local sourcing

ES.3 LEGAL AND INSTITUTIONAL FRAMEWORK

ES.3.1 Nigerian Regulatory Framework

This ESIA complies with:

- EIA Act Cap E12 LFN 2004 -- Mandatory EIA for prescribed activities (Category I designation)
- NESREA Regulations (2007--2021) -- Air quality, noise, water quality, sanitation and waste control standards
- Harmful Waste Act Cap H1 LFN 2004 -- Prohibits improper disposal of hazardous waste (asbestos, chemicals)
- Land Use Act Cap L5 LFN 2004 -- Governs land acquisition and compensation
- Violence Against Persons (Prohibition) Act 2015 -- Prohibits sexual violence and exploitation
- Lagos State Environmental Laws -- LASEPA permits, LAWMA waste management, physical planning approvals

ES.3.2 AfDB Operational Safeguards (ISS 2024)

The project triggers the following AfDB Operational Safeguards:

Safeguard	Requirement	Project Compliance Action
OS1 -- Environmental and Social Assessment	Full ESIA for Category 1 projects	This ESIA report
OS2 -- Labour and Working Conditions	Worker protection, OHS, non-discrimination	Labour Management Plan, OHS Plan
OS3 -- Resource Efficiency and Pollution Prevention	Waste management, pollution control	HMWMP, wastewater management
OS4 -- Community Health, Safety and Security	Community safety, traffic management	Traffic Management Plan, EPRP
OS5 -- Land Acquisition and Involuntary Resettlement	Compensation, livelihood restoration	Not triggered for Group 5 (zero PAPs)
OS6 -- Biodiversity and Ecosystem Services	Critical habitat screening, offsets	Wetland buffers, biodiversity monitoring
OS10 -- Stakeholder Engagement and Information Disclosure	Public consultation, GRM, disclosure	SEP, GRM, public disclosure

ES.3.3 International Standards

Where Nigerian law is silent or weaker, the following international standards are adopted:

- IFC Performance Standards (PS1--PS8) and EHS Guidelines

- WHO Safe Management of Wastes from Health-Care Activities (2014)
- ILO Conventions 155, 161, 187, and core labour standards
- Equator Principles IV (EP4)
- UN Guiding Principles on Business and Human Rights (UNGPs)

ES.4 BASELINE ENVIRONMENTAL AND SOCIAL CONDITIONS

ES.4.1 Physical Environment

Parameter	Description
Location	Epe and Ibeju-Lekki Axis – low-lying coastal plain, sandy/clayey soils
Climate	Humid tropical (Köppen: Aw); bimodal rainfall (1,500–1,800 mm/year); 26–35°C
Air Quality	PM_{10} and $PM_{2.5}$ levels within WHO and FMEnv limits
Noise	Daytime and night-time noise levels mostly within acceptable limits
Water Quality	Groundwater generally meets WHO/FMEnv drinking water standards
Geology	Benin Formation coastal plain sands; alluvial deposits
Erosion Risk	High at Solu-Alade and Orimedu; medium at Agbowa and Ejirin
Flood Risk	High at Orimedu (coastal interface) and Agbowa (wetland/riverine); medium at Ejirin and Solu-Alade

ES.4.2 Biological Environment

Aspect	Findings
Vegetation	Coastal shrubs, farmland, wetland vegetation, and riparian zones
Sensitive Ecosystems	Wetlands and coastal interfaces across the corridor
Critical Habitat	Likely Critical Habitat screening applies across project sites (IFC PS6)
Notable Species	Coastal and wetland avifauna, reptiles, and localized aquatic biodiversity
Ecosystem Services	Groundwater supply, fisheries/livelihoods, and natural coastal/flood regulation

ES.4.3 Socio-economic Environment

Aspect	Findings
Population	Growing semi-urban and coastal populations across catchment areas
Livelihoods	Fishing, farming, trading, and artisanal activities

Land Tenure	Established government-owned or community-supported health parcels
Resettlement	Zero physical or economic displacement (zero PAPs identified for Group 5)
Vulnerable Groups	Women-headed households, the elderly, persons with disabilities, and low-income fishers/farmers
GBV Risk	Medium--High (coastal isolation, labour influx, and poor pathway lighting)
Cultural Heritage	No recorded heritage sites within immediate footprints; chance finds procedures applicable

ES.4.4 Climate Baseline and Projections

Parameter	Current (2024)	Projected (2050, RCP 8.5)
Temperature (average)	28°C	+2.5°C
Hot days (>35°C)	25 days/year	80 days/year
Extreme rainfall intensity	Baseline	+30%
Sea-level rise	2--3 mm/year	+0.5 m

High-risk sites: Orimedu (coastal flooding and sea-level rise), Solu-Alade (asbestos and erosion risks), Agbowa (wetland/riverine flooding), Ejirin (climate variability).

ES.5 KEY ENVIRONMENTAL AND SOCIAL IMPACTS

ES.5.1 Summary of Unmitigated Impacts

Site	Impact Category	Impact Description	Significance (Unmitigated)
Solu-Alade	Hazardous Materials	Asbestos exposure from uncontrolled removal of suspected ACM in roofing/walls (fibre release >0.1 f/ml)	Critical ●
	Biodiversity	Wetland and coastal vegetation and habitat loss, reducing flood-buffering and biodiversity services	Critical ●
	Water Quality	Lagoon/wetland contamination from sediment runoff, fuel/oil spills, concrete wash water	Major □
	GBV/SEA/SH	GBV/SEA/SH risks and lack of confidential reporting channels	Major □

	Fisheries	Disruption to coastal fishing livelihoods and fisheries habitat	Major □
Ejirin	Hazardous Materials	Asbestos exposure from confirmed ACM in roofing/wall materials	Critical ●
	Soil Erosion	Erosion and sedimentation of drainage systems and wetland interfaces	Major □
	Biodiversity	Wetland vegetation and habitat loss	Major □
	GBV/SEA/SH	GBV/SEA/SH risks and lack of confidential reporting channels	Major □
Orimedu	Biodiversity	Coastal and wetland vegetation and habitat loss; disturbance to species of conservation concern	Critical ●
	Socio-Economic	Zero economic displacement (zero PAPs identified)	None / Low
	GBV/SEA/SH	GBV/SEA/SH risks and lack of confidential reporting channels	Major □
Agbowa	Socio-Economic	Zero economic displacement (zero PAPs identified)	None / Low
	Labour & GBV	Labour influx pressures; GBV/SEA/SH risks and lack of confidential reporting channels	Major □
	Community H&S	Traffic congestion and community safety risks along access corridors	Major □
	Air Quality	Dust (PM10, PM2.5) from earthworks, demolition, vehicle movement	Moderate □

ES.5.2 Key Beneficial Impacts

Benefit	**Quantification**
Healthcare access	Expanded primary healthcare access across Epe and Ibeju-Lekki catchment areas
Maternal mortality reduction	Estimated 20–30% reduction
Under-five mortality reduction	Estimated 25–35% reduction

Direct jobs created	110–135 jobs during construction (Group 5 total)
Indirect jobs	Estimated supply chain and local economic opportunities
GHG emissions reduction	250–500 tCO_2e/year (solar PV adoption)
Diesel savings	Significant fuel savings via reliable solar-hybrid power systems

ES.6 ANALYSIS OF ALTERNATIVES

Alternative	**Assessment**	**Conclusion**
No-Project Alternative	Continued infrastructure decay, severe flood exposure, and poor access for communities across the Ibeju-Lekki axis (Agbowa, Solu-Alade, Orimedu, and Ejirin)	Rejected – unacceptable
Alternative Sites	Utilizing existing PHC land parcels at Agbowa, Solu-Alade, Orimedu, and Ejirin avoids additional land acquisition and displacement beyond the addressed RAP scope	Preferred – existing PHC land parcels
Conventional (at-grade) Design	Recurrent seasonal flood damage and service interruption in low-lying hydromorphic and floodplain areas	Rejected
Elevated-Platform / Green Building Design	Designs out extreme flood risks; lower operating costs; climate resilience tailored to water-logged environments	Preferred
Diesel Generators	High operating cost, air pollution, GHG emissions, and logistics challenges for remote or water-locked locations	Rejected
Solar Power + Battery	Low operating cost, reduced emissions, resilient power matching 24–48 hour storage requirements	Preferred
Open Burning of Waste	Air pollution, community health risk, illegal status under environmental laws	Rejected
Non-burn HMWMP (AfDB-compliant)	Colour-coded segregation, non-burn treatment, licensed LAWMA disposal; protects sensitive coastal, lagoon, and creek ecosystems	Preferred

ES.7 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

ES.7.1 Key Mitigation Measures

Impact	Mitigation Measure	Responsibility
Asbestos	Licensed survey and abatement, wet removal, air monitoring (≤ 0.1 f/ml)	Specialist Contractor
Creek / Water Pollution	Non-burn waste treatment; sediment and spill prevention; manifest protocols; no unauthorized discharge to local lagoons, rivers, or water corridors	Contractor / Facility Operator
Flooding	Elevated platform design across low-lying sites (Agbowa, Solu-Alade, Orimedu, Ejirin) to manage extreme fluvial/coastal floods; oversized drainage; elevated electricals	Contractor / PIU
GBV/SEA/SH	Zero-tolerance Code of Conduct, training, confidential survivor-centred reporting, referral pathways tailored for local communities	Contractor / PIU / GBV Specialist
Labour Influx	Labour Influx Plan; ≥50% local hiring; worker conduct rules	Contractor
Traffic and Water Transport Safety	Traffic Management Plan on land and water corridors: marshals, speed limits, navigation safety, signage	Contractor
Erosion / Water Quality	Silt fences, sediment traps, bunded fuel storage, spill kits	Contractor
Medical Waste	Colour-coded segregation, non-burn treatment, secure transport, LAWMA disposal	Facility Operator
Dust / Noise	Water spraying, covered stockpiles; barriers, restricted hours, scheduling	Contractor

ES.7.2 Monitoring Plan

Parameter	Indicator	Frequency	Trigger
Air Quality	PM10, PM2.5	Daily PM10, Weekly PM2.5	> 50 µg/m³
Asbestos	Airborne fibres	Continuous during abatement	> 0.1 f/ml

Noise	Leq dB(A)	Weekly	> 55dB(A) residential daytime
Water Quality (Creek/Lagoon)	TSS, pH, hydrocarbons	Monthly	TSS > 30mg/L
Erosion	Silt fence condition	Weekly	Any damage
Waste Segregation	% correct	Daily	< 90%
GBV Training	% workers trained	Monthly	< 100%
GRM	% cases resolved ≤14 days	Monthly	Any unresolved

ES.7.3 Institutional Responsibilities

Entity	Role
PIU (LSMoH)	ESMP oversight, contractor compliance, RAP delivery, GRM, reporting to AfDB
Contractor	CESMP implementation, monitoring, OHS, GBV, community/water-transit liaison; monthly reports to PIU
Facility Operator	Operational ESMP, HMWMP, IPC, wastewater management, waste logistics
IESM	Independent quarterly audits, compliance verification
FMEnv / LASEPA	Regulatory oversight, permits, inspections
AfDB	Safeguard supervision, compliance enforcement

ES.7.4 ESMP Budget

The ESMP budget covers all environmental, social, monitoring, compliance, climate-resilience, and grievance-redress measures required for the Group 5 Ibeju-Lekki axis sites (Agbowa, Solu-Alade, Orimedu, and Ejirin). This includes site-specific mitigation actions, environmental monitoring, asbestos management, climate-resilient design features, labour-influx and GBV/SEA/SH controls, stakeholder engagement, and full implementation of the GRM across the axis as shown below:

Site	Construction Phase (₦)	Construction Phase (US$)	Annual Operational (₦)	Annual Operational (US$)
Agbowa PHC	174,570,000	116,380	15,000,000 – 20,000,000	10,000– 13,333

Solu-Alade PHC	169,510,000	113,007	12,000,000– 16,000,000	8,000– 10,667
Orimedu PHC	161,920,000	107,947	12,000,000 – 16,000,000	8,000– 10,667
Ejirin PHC	165,000,000	110,000	12,000,000 – 16,000,000	8,000 – 10,667
TOTAL	**671,000,000**	**447,334**	**51,000,000– 68,000,000**	**34,000– 45,334**

ES.8 HAZARDOUS AND MEDICAL WASTE MANAGEMENT PLAN (HMWMP)

ES.8.1 Waste Categories and Management

Waste Category	Colour Code	Treatment / Disposal
General Waste	Black	LAWMA landfill
Infectious Waste	Yellow	Non-burn treatment (autoclave-type) – LAWMA landfill
Sharps	Red (puncture-proof)	Licensed treatment/disposal
Pharmaceutical Waste	Brown	Return to manufacturer / licensed disposal
Chemical Waste	Blue	Licensed hazardous waste contractor
Asbestos	Special label	Licensed abatement and hazardous waste landfill with manifest

Note: No open burning; no discharge of any waste stream to local lagoons, rivers, or water corridors.

ES.8.2 Asbestos Management

- Aged infrastructure across the axis likely containing hazardous materials.
- Licensed surveyor to confirm presence/absence and extent.
- Licensed abatement contractor: wet removal, HEPA controls, continuous air monitoring.
- Clearance monitoring: ≤ 0.01f/ml.
- Hazardous waste landfill disposal with manifest.

ES.8.3 Occupational Health and Safety for Waste Handlers

- **PPE:** Gloves, boots, aprons, goggles, masks (P3 respirators for asbestos works).
- Hepatitis B vaccination, tetanus booster.

- Needle-stick protocol (PEP within 72 hours).
- Annual medical surveillance.

ES.9 GENDER-BASED VIOLENCE / SEA / SH ACTION PLAN

ES.9.1 Risk Assessment

Site	Key GBV/SEA/SH Risks	Risk Level
Agbowa	High labour influx, market area, substance abuse, limited female staff	Medium--High
Solu-Alade	Isolated coastal paths, poor lighting, wetland community, limited reporting	Medium
Orimedu	Coastal community, limited female staff, poor lighting	Medium
Ejirin	Isolated paths, limited female staff, poor lighting	Medium

ES.9.2 Prevention Measures

Measure	Description
Code of Conduct	Zero tolerance for GBV/SEA/SH; signed by all workers, subcontractors, security
Worker Training	Induction + monthly toolbox talks
Community Awareness	Quarterly sessions; women's groups; youth engagement
Safe Recruitment	No minors; background checks; gender-balanced hiring ($\ge 20\%$ female)
Improved Lighting	Solar lights around PHCs and paths
Safe Spaces	Confidential rooms in PHCs; women's centres

ES.9.3 Response Measures

Measure	Description
Survivor-Centred Protocol	Confidentiality, safety, respect, no retaliation
Reporting Channels	Hotline (SMS/WhatsApp), suggestion boxes, female GRM focal points
Referral Pathways	Medical (PEP within 72 hours), psychosocial, legal, shelter
Sanctions	Warning → suspension → termination → prosecution
GRM	48-hour acknowledgement; 14-day resolution

ES.9.4 Monitoring Indicators

Indicator	Target	Frequency
Workers trained	100%	Monthly
Community members reached	≥60%	Quarterly
GBV cases resolved ≤ 14 days	≥90%	Monthly
CoC compliance	100%	Monthly
Survivor satisfaction	≥80%	Quarterly

ES.10 STAKEHOLDER ENGAGEMENT AND GRIEVANCE REDRESS MECHANISM

ES.10.1 Stakeholder Consultation Activities

Activity	Number	Participants
Community meetings	6	Local residents (≥48% women)
Focus Group Discussions	3	Women, youth, elderly
LGA health authority meetings	2	Health officials
LASEPA meeting	1	Regulatory officials

ES.10.2 Key Concerns Raised by Stakeholders

Concern	Response
Disruption of access during construction	Traffic Management Plan; maintain access
Waste management	HMWMP; LAWMA disposal contracts
Employment for locals	≥ 50% local hiring target
Safety of children near construction sites	Fencing, signage, community liaison
Wetland protection	50 m buffers; sediment controls
Asbestos risks	Licensed abatement; air monitoring
GBV/SEA/SH	Code of Conduct; confidential reporting; referral pathways

ES.10.3 Grievance Redress Mechanism (GRM)

The GRM provides accessible, confidential, and timely resolution of grievances:

Feature	Description
Entry Points	Toll-free hotline, suggestion boxes, CLOs, female GRM focal points
Acknowledgement	Within 48 hours
Resolution	Within 14 days (Level 1); 21 days (final appeal)
Tiered System	PHC level → LGA liaison → PIU → FMEnv/AfDB

GBV Cases	Confidential handling; survivor-centred approach
Reporting	Quarterly to AfDB

ES.11 DISCLOSURE AND REPORTING

ES.11.1 Disclosure Requirements

This ESIA will be disclosed in accordance with AfDB and FMEnv requirements for Category 1 projects:

Requirement	Detail
Disclosure Period	120 days (AfDB requirement for Category 1 projects)
Disclosure Locations	LSMoH headquarters, Epe and Ibeju-Lekki LGA/LCDA secretariats, project website, hard copies in PHC waiting areas
Public Hearing	Within 30 days after disclosure
Non-Technical Summary	In English and Yoruba

ES.11.2 Reporting Framework

Report	Frequency	From → To
E&S Monitoring Report	Weekly	Contractor → PIU
E&S Performance Report	Quarterly	PIU → AfDB
ESMP Compliance Report	Quarterly	Facility Operator → PIU
Independent Audit Report	Quarterly	IESM → AfDB
Incident Report	Within 24 hours	Contractor → PIU

ES.12 CONCLUSION AND RECOMMENDATIONS

ES.12.1 Overall Conclusion

The ESIA concludes that the four PHC facilities in the Epe and Ibeju-Lekki Axis are environmentally and socially viable. All adverse impacts -- environmental, social, health, safety, and GBV-related -- can be effectively mitigated through the ESMP, HMWMP, GBV Action Plan, and other safeguard instruments.

The project will deliver substantial positive impacts, including:

- Expanded access to quality healthcare for approximately 200,000 residents across catchment areas
- Reduced maternal and child mortality (estimated 20–35% reduction)
- Strengthened climate resilience through green building design
- Local employment (110–135 direct construction jobs for Group 5 total) and economic growth

- Reduced GHG emissions (250–500 tCO_2e/year) through solar PV
- Improved gender safety and GBV prevention systems

The project aligns with the AfDB ISS (2024), the FMEnv EIA Act, the IFC Performance Standards, the WHO standards, the ILO conventions, and the Equator Principles IV.

ES.12.2 Recommendations

Pre-Construction Recommendations:

- Conduct asbestos surveys at Solu-Alade; implement abatement if confirmed
- Establish GBV referral pathways (medical, psychosocial, legal, shelter)
- Recruit GBV Specialist and activate confidential reporting channels
- Implement climate-resilient design (oversized drainage, elevated electricals, solar PV)
- Obtain all regulatory permits (LASEPA, LAWMA, building approvals)
- Conduct coastal and wetland Critical Habitat screening (Solu-Alade, Orimedu, Agbowa, Ejirin)
- Verify zero displacement / screening compliance for Group 5 sites before construction begins
- Train contractors and PIU staff on AfDB ISS and ESMP implementation

Construction Phase Recommendations:

- Enforce CESMP: dust control, noise limits, erosion control, spill prevention
- Implement GBV Action Plan: CoC, training, reporting, sanctions
- Ensure ≥50% local hiring to reduce labour influx
- Conduct environmental monitoring (air, noise, water, waste)
- Maintain GRM: 48-hour acknowledgement, 14-day resolution
- Implement Traffic Management Plan at active construction corridors
- Conduct quarterly IESM audits and implement corrective actions

Operational Phase Recommendations:

- Implement HMWMP: segregation, autoclaving, LAWMA disposal
- Apply WHO IPC standards: hand hygiene, sterilisation, PPE, cleaning
- Maintain climate-resilient features: solar PV, drainage, heat management
- Continue GBV prevention and response: staff training, confidential reporting
- Maintain GRM for patients and community members
- Desludge septic tanks every 2--3 years
- Prioritise solar power to reduce GHG emissions

ES.12.3 Final Statement

The Lagos State Health Infrastructure Project (LSHIP) -- Epe/Ibeju-Lekki Axis will significantly improve public health outcomes, strengthen health system resilience, and enhance environmental sustainability. With robust mitigation measures, strong institutional oversight, and continuous community engagement, the project will deliver long-term benefits while maintaining full compliance with national and international safeguards.

The project is recommended for approval by the Federal Ministry of Environment (FMEnv) and the African Development Bank (AfDB), subject to:

- Full implementation of the ESMP before commissioning each PHC
- Availability of a third-party external monitoring report every 6 months
- Evidence of functioning GRM and GBV referral pathway prior to construction start

CHAPTER ONE – INTRODUCTION

1.0 Introduction

The Lagos State Health Infrastructure Project (LSHIP) is a US$200 million health system strengthening programme implemented by the Lagos State Ministry of Health (LSMoH) with financing from the African Development Bank (AfDB) (African Development Bank, 2025). The initiative aims to modernize, expand, and climate-proof healthcare infrastructure across Lagos State through the construction of 11 new Primary Healthcare Centres (PHCs), refurbishment of 19 existing PHCs, and the development of secondary and tertiary healthcare facilities including a 140-bed General Hospital in Ibeju-Lekki and the Infectious Diseases Research Institute (IDRI) in Yaba (Lagos State Ministry of Health, 2025).

The AfDB has classified the LSHIP as Category 1 (High Risk) under its Integrated Safeguards System (ISS), requiring full Environmental and Social Impact Assessments (ESIAs) for all 30 PHC sites (African Development Bank, 2025). This classification reflects the project's multi-site footprint, potential involuntary resettlement at six locations, presence of asbestos in older facilities, proximity to wetlands and mangrove ecosystems, and the scale of construction activities in densely populated urban and peri-urban communities (African Development Bank, 2025).

This ESIA has been prepared in accordance with the FMEnv EIA Act CAP E12 LFN 2004 (Federal Ministry of Environment, 2004), the AfDB ISS (OS1—OS10) (African Development Bank, 2013), IFC Performance Standards (International Finance Corporation, 2012), WHO healthcare waste guidelines (World Health Organization, 2014), and relevant Lagos State environmental regulations (Lagos State Environmental Protection Agency, 2017). It provides a comprehensive assessment of the potential environmental and social impacts associated with the LSHIP and proposes mitigation, management, and monitoring measures to ensure that the project is implemented sustainably and in compliance with national and international standards.

1.1 National and State Context

Nigeria's healthcare system faces significant challenges, including inadequate financing, high out-of-pocket expenditure, weak primary healthcare systems, and limited diagnostic capacity (Federal Ministry of Health, 2018). With a population exceeding 200 million (World Bank, 2024), the country allocates only 4-5% of its annual budget to health, far below the 15% Abuja Declaration target (African Union, 2001; World Health Organization, 2023). Out-of-pocket expenditure accounts for over 75% of health financing (National Bureau of Statistics, 2022). The National Primary Health Care Development Agency (NPHCDA) has driven reforms

through the Basic Health Care Provision Fund (BHCPF), but in 2024 Lagos State received only N995 million -- about 2% of the total BHCPF allocation -- despite housing over 30 million people and contributing more than 30% of Nigeria's GDP (National Primary Health Care Development Agency, 2024; National Bureau of Statistics, 2023).

Lagos State, with an estimated population exceeding 30 million (Lagos State Bureau of Statistics, 2024), experiences health challenges typical of a rapidly growing megacity: high maternal and child mortality, a rising burden of non-communicable diseases, and weak pandemic preparedness (Lagos State Ministry of Health, 2023). Only 337 of 350 public PHCs are functional (Lagos State Primary Healthcare Board, 2024). Most secondary hospitals operate at well above designed capacity, and the state has no BSL-3 or BSL-4 laboratory for emerging infectious diseases (Nigeria Centre for Disease Control, 2024).

Table 1.1: Lagos State Health System Overview

Indicator	**Value**
Lagos State GDP (nominal)	US$102 billion
Estimated Population (2022)	30 million
Total Healthcare Budget (2024)	N151 billion (6% of state budget)
Primary Health Centres (Public)	339
Functional PHCs	~220
Secondary/Tertiary Public Facilities	30
Private Hospitals	2,333
Health Insurance Coverage	1,300,000+ residents

Lagos State operates a three-tier healthcare system comprising (Lagos State Ministry of Health, 2023):

- 5 tertiary facilities (state and federal)
- 28 public secondary hospitals
- 350 public PHCs, of which approximately 337 are functional
- Over 2,333 private hospitals, providing 60--70% of healthcare services (Health Facility Monitoring and Accreditation Agency, 2024)

Despite this extensive network, health financing remains inadequate. In 2024, Lagos allocated 6.75% of its total budget to health, below the 15% Abuja Declaration benchmark (Lagos State Ministry of Economic Planning and Budget, 2024). The LSHIP directly responds to these deficits. It aligns with the National Health Strategic Development Plan (Federal Ministry of Health, 2018), the Lagos State Development Plan 2052 (Lagos State Government, 2022), and

Nigeria's Nationally Determined Contributions (NDCs) under the Paris Agreement (Federal Ministry of Environment, 2021).

1.2 Geographic & Strategic Context

1.2.1 Project Corridor & Lagos State Coverage

The 29 project sites are distributed across 20 Local Government Areas (LGAs) and 37 Local Council Development Areas (LCDAs) in Lagos State (Lagos State Ministry of Local Government and Community Affairs, 2024). Unlike a linear infrastructure project, the LSHIP footprint comprises 29 discrete nodes, which have been systematically organised into eight groups to enhance the efficiency of fieldwork, logistics, and environmental and social assessments (Multiple Development Services, 2026). These clusters are delineated based on geographic proximity, access routes, and ecological characteristics, ensuring that project sites with similar environmental conditions, settlement patterns, and administrative contexts are assessed cohesively and consistently (Lagos State Ministry of Environment, 2023).

The distribution of project sites across the eight groups is summarised below:

- Group 1: Alimosho / Agege / Ikeja Axis -- 4 PHCs
- Group 2: Mainland / Yaba Axis -- 4 PHCs
- Group 3: Ikorodu North -- 4 PHCs
- Group 4: Ikorodu Axis -- 4 PHCs
- Group 5: Eti-Osa / Ibeju-Lekki Axis -- 4 PHCs
- Group 6: Ibeju-Lekki Coastal Hub - 3 PHCs
- Group 7: Badagry West Axis --3 PHCs
- Group 8: Waterfront Periphery Axis -3 PHCs

Total = 29 PHCs

To support spatial understanding and ESIA planning, the clusters are presented in Table 1.2.

Table 1.2: Geographical Clusters for the 29 LSHIP Project Sites

S/N	PHC Facilities	LGA / LCDA	General Characteristics / Description	Status	Coordinates	
(Group 1) Amuwo – Odofin Cluster						
1	Agboju PHC	Amuwo Odofin / Oriade	Densely populated; mixed urban/peri-urban;	Construction	6.458077	3.283238

2	Oridilu PHC	Ajeromi Ifelodun / Ifelodun	drainage and flooding challenges. / Western inland corridor	Refurbishment	6.464410	3.351390
3	Bada PHC	Alimosho / Ayobo Ipaja		Refurbishment	6.590535	3.228266
4	Ogbomoshotedo PHC	Alimosho / Egbe Idimu		Refurbishment	6.575358	3.258728
Group 2 (Lagos - Mainland Cluster)						
1	Isolo PHC	Oshodi-Isolo / Isolo	High-density urban environment; mixed residential-commercial land use; ageing infrastructure / Central metropolitan corridor	Refurbishment	6.528600	3.320807
2	Oba Salami PHC	Lagos Mainland / Yaba		Refurbishment	6.522283	3.368430
3	Ojodu PHC	Ikeja / Ojodu		Construction	6.631394	3.342287
4	Otumara PHC	Lagos Mainland / Yaba		Construction	6.477588	3.374566
Group 3 (Ikorodu Cluster)						
1	Omolaiye PHC	Ikorodu / Ikorodu North	Freshwater swamp forest zone; peri-urban expansion; erosion-prone and waterlogged pockets	Refurbishment	6.66839365	3.47307938
2	Eruwen PHC	Ikorodu / Ikorodu North		Construction	6.60440414	3.54358095
3	Olorunda PHC	Ikorodu / Ikorodu North		Construction	6.66833451	3.58520869
4	Agura PHC	Ikorodu		Construction	6.57996161	3.62752998

Group 4 (Ikorodu – Imota Cluster)						
1	Imota PHC	Ikorodu / Imota	Freshwater swamp forest zone; peri urban expansion; erosion prone and waterlogged pockets	Refurbishment	6.66005734	3.66968297
2	Bayeiku PHC	Ikorodu / Igbogbo Bayeiku		Refurbishment	6.546943	3.543106
3	Abule Eko PHC	Ikorodu / Ijede		Refurbishment	6.58331880	3.59483036
4	Owutu PHC	Ikorodu / Ikorodu West		Construction	6.63301273	3.48131561
Cluster 5 (Epe / Ibeju - Lekki Cluster)						
1	Agbowa PHC	Epe / Ikosi Ejirin	Rapid urbanization; proximity to Lekki Free Zone; mangrove and wetland systems / Eastern coastal and industrial corridor	Construction	6.639779	3.712229
2	Ejirin PHC	Epe / Ikosi Ejirin		Refurbishment	6.612939	3.897653
3	Solu Alade PHC	Ibeju-Lekki / Ibeju-Lekki		Refurbishment	6.43917	3.78986
4	Orimedu PHC	Ibeju-Lekki / Ibeju-Lekki		Construction	6.44066	3.90141
Group 6 (Ibeju – Lekki Cluster)						
1	General Hospital, Ibeju	Ibeju-Lekki		Construction		
2	Magbon PHC	Ibeju-Lekki / Lekki	Coastal lagoon and mangrove edge; confirmed asbestos at	Refurbishment	6.42880	3.99687

3	Idasho PHC	Ibeju-Lekki / Lekki	two PHC sites; development pressure from Lekki Free Trade Zone / Eastern coastal and industrial corridor	Refurbishment	6.42940	3.98636
4	Idotun PHC	Ibeju-Lekki / Lekki		Refurbishment	6.42451	4.2303
Group 7 (Badagry Cluster)						
1	APA PHC	Badagry / Badagry West	Coastal/mangrove ecosystems; riverine communities; limited access routes; high climate vulnerability, Remote coastal access with seasonal flooding; Egun-speaking fishing communities; limited road and telecommunications connectivity / Western coastal corridor	Construction	6.430864	2.823958
2	Igbogbele PHC	Badagry / Badagry West		Refurbishment	6.423141	2.779165
3	Farasime PHC	Badagry / Badagry West		Refurbishment	6.425841	2.714320
Group 8 (Badagry / Kosofe Cluster)						
1	Ibereko PHC	Badagry / Olorunda	Coastal island and lagoon-edge sites, fishing and waterfront-dependent communities / Western coastal corridor	Refurbishment	6.441703	2.919342
2	Agboyi PHC	Kosofe / Agboyi Ketu		Refurbishment	6.578345	3.409531

Figures 1.1 to 1.3 provide the corresponding spatial illustrations of the proposed project sites. Figure 1.1 presents a map of Nigeria highlighting Lagos State, illustrating its strategic location in the southwestern region of the country and its coastal boundary along the Atlantic Ocean.



Figure 1.1: *Map of Nigeria Highlighting Lagos State*

Source: Multiple Development Services (2026)

The LSHIP footprint consists of 29 project sites distributed across 20 LGAs and 37 LCDAs. As stated in the document, "the LSHIP footprint comprises 29 discrete nodes, systematically organised into geographical clusters to enhance the efficiency of fieldwork, logistics, and environmental and social assessments". Clusters were delineated based on proximity, access routes, ecological characteristics, and administrative boundaries.

Figure 1.2 provides a detailed administrative map of Lagos State, showing all 20 LGAs and the 29 LSHIP project sites, each represented by colour-coded markers corresponding to their assigned geographical clusters.



Figure 1.2 -- Map of Lagos State Showing the 20 LGAs and 29 Project Sites

Figure 1.3 displays cluster-specific maps, each depicting the project sites along a particular axis, including major access roads, surrounding water bodies, ecological features, and sensitive receptors relevant to the ESIA.

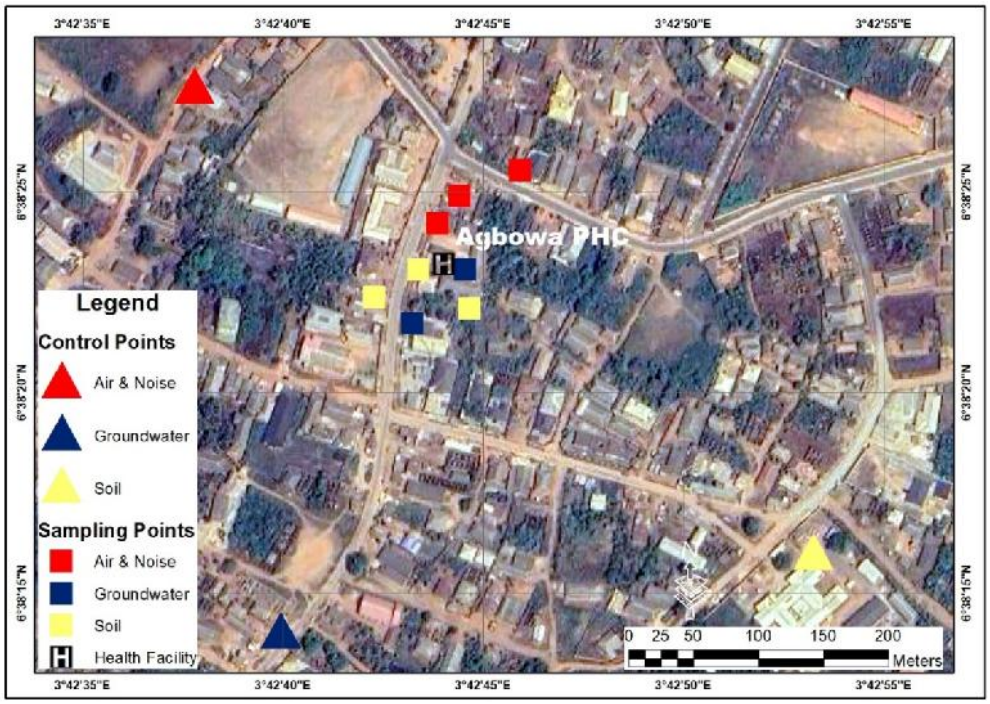


Figure 1.3a - Agbowa PHC Sampling Map

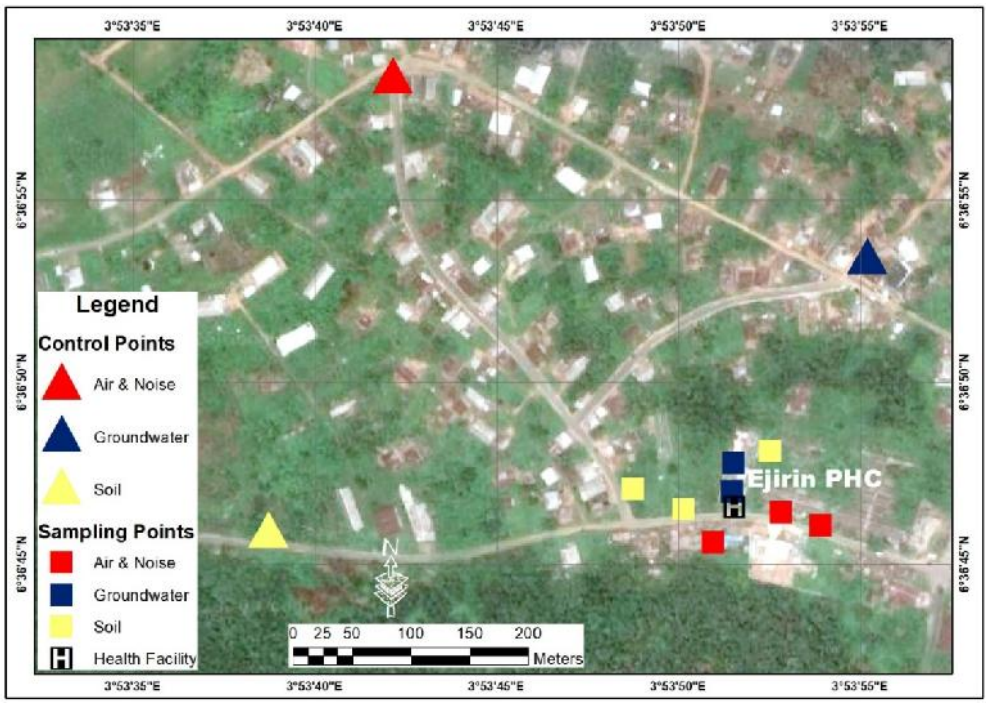


Figure 1.3b - **Ejirin PHC Sampling Map**

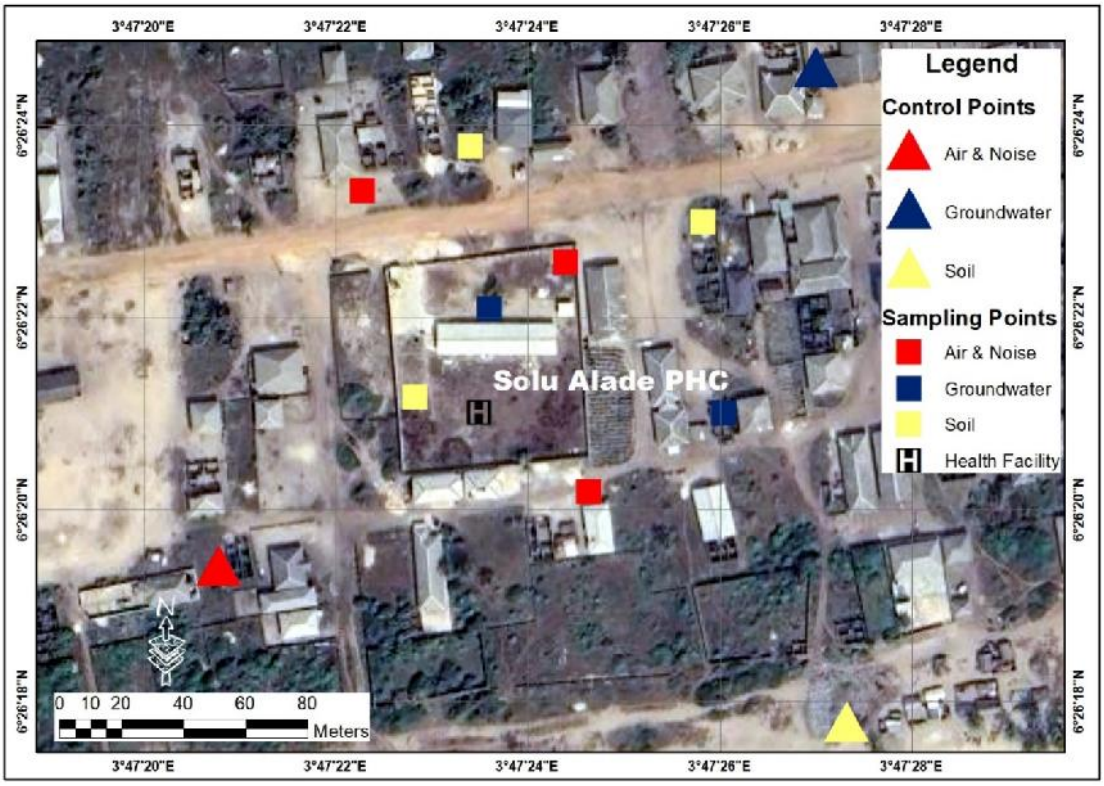


Figure 1.3c - Solu Alade PHC Sampling Map



Figure 1.3d- **Orimedu PHC Sampling Map**

Figure 1.3 -- Project Sites by Cluster (four Detailed Maps)

1.2.2 Project Typology Overview

In addition to the statewide cluster distribution, the 29 PHC facilities under the Lagos State Health Project comprise 10 new-construction sites and 19 refurbishment sites (Figure 1.4). This typology based on the Feasibility Study (2025) and stakeholder meetings in 2026, reflects the varying levels of structural intervention required across the project footprint.

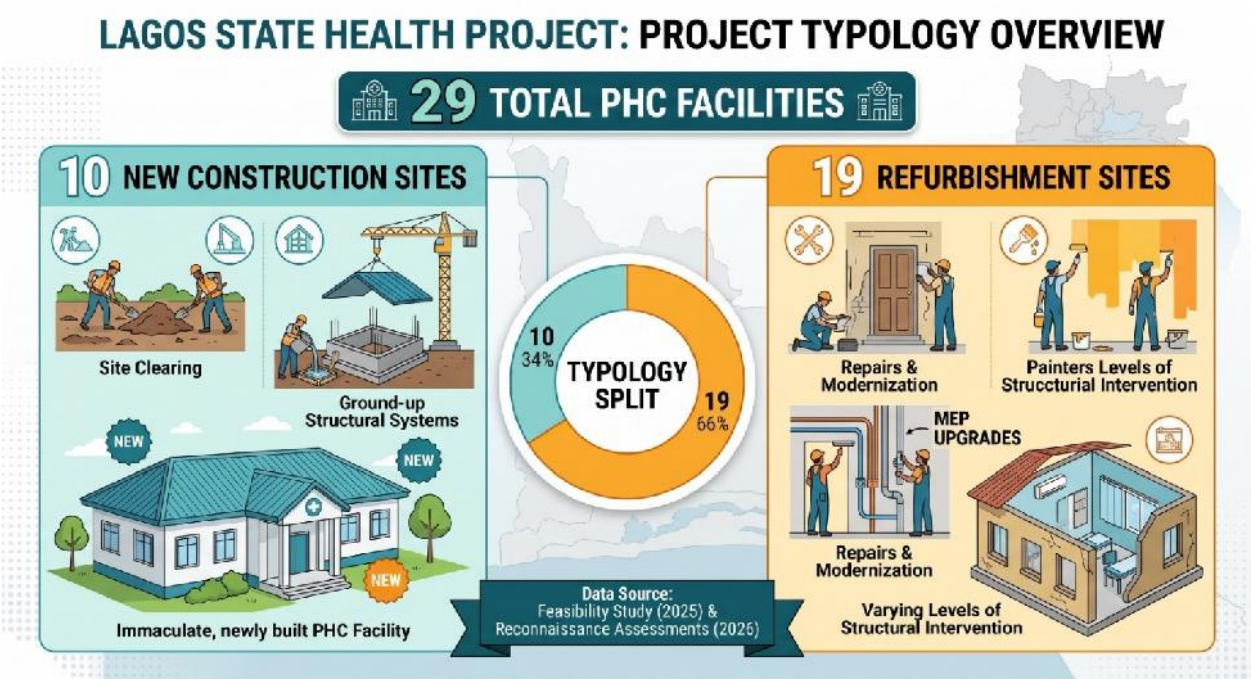


Figure 1.4: Project Typology Overview

1.2.3 Need for ESIA Across All 29 PHC Facilities

Although the PHC sites differ in size, location, and intervention type, the entire programme requires full ESIA coverage due to the combined environmental and social risks identified during screening. The need for ESIA across all facilities is driven by the following factors:

a) Multi-site, statewide footprint

The project spans 20 LGAs and 37 LCDAs, covering diverse ecological zones, settlement patterns, and environmental sensitivities. AfDB ISS requires comprehensive ESIA for multi-node public health infrastructure programmes to ensure consistent risk management across all sites.

b) High-risk construction activities at multiple sites

Ten PHCs involve new construction, including demolition, earthworks, foundations, structural works, and full MEP installation. These activities trigger AfDB OS1 (Environmental Assessment) due to potential impacts on soil, water, air quality, noise, biodiversity, and community safety.

c) Refurbishment sites still carry significant E&S risks

Nineteen PHCs require refurbishment, including:

- asbestos removal (confirmed or suspected),
- structural repairs,
- electrical and mechanical upgrades,
- temporary service relocation,
- Construction waste management.

These activities trigger ESIA because they involve hazardous materials, occupational health risks, and community interface impacts.

d) Land acquisition and economic displacement at several sites

Multiple PHCs require boundary expansion or removal of informal structures, triggering AfDB OS2 (Involuntary Resettlement). RAPs are required for sites with:

- farmers (Olorunda),
- shop owners (Agura),
- market stall operators (Ojodu),
- kiosk operators (Agboyi),
- large informal settlements (Agboju).

Once OS2 is triggered at any site, AfDB requires full ESIA coverage for the entire programme to ensure uniform safeguard compliance.

e) Sensitive environmental settings

Several PHCs are located in wetlands, coastal zones, flood-prone areas, erosion-prone areas, or water-logged ecosystems (e.g., Omolaiye, Agbowa, Orimedu, Idotun, Magbon, Ibereko). These conditions require site-specific impact assessment and biodiversity screening under AfDB OS3 and OS10.

f) Public health infrastructure is inherently high-sensitivity

Healthcare facilities generate medical waste, wastewater, infectious materials, and pharmaceutical residues. AfDB classifies public health infrastructure as **high-sensitivity**, requiring ESIA regardless of project size.

g) Need for a unified ESMP across all sites

A consolidated ESMP is required to:

- standardise mitigation measures,
- harmonise contractor obligations,
- ensure statewide compliance,
- support monitoring by FMEnv, LASEPA, and AfDB.

This is only possible when all facilities undergo ESIA screening and categorisation.

Together, these factors justify the preparation of a full ESIA for all 29 PHC facilities, ensuring compliance with AfDB ISS (2023/2024), FMEnv EIA Act CAP E12 LFN 2004, and Lagos State environmental regulations.

1.3 Project Delivery & Key Entities

The Lagos State Health Project is delivered through a coordinated, multi-institutional structure designed to ensure effective planning, safeguard compliance, and high-quality implementation across all 29 PHC facilities. The project involves several key entities, each with defined responsibilities under the AfDB Integrated Safeguards System (ISS, 2023/2024), FMEnv EIA Act CAP E12 LFN 2004, and Lagos State regulatory frameworks.

1.3.1 Lagos State Health Project (LSHP) -- Project Owner

The Lagos State Health Project (LSHP) is a flagship statewide health infrastructure upgrade programme aimed at modernising primary healthcare delivery, improving service quality, and strengthening resilience across Lagos State. The LSHP covers 29 PHCs across 20 LGAs and 37 LCDAs, involving both new construction and refurbishment interventions.

The LSHP is responsible for:

- overall project ownership and strategic direction,
- provision of land and enabling infrastructure,
- coordination with LGAs/LCDAs and community stakeholders,
- ensuring compliance with state and federal regulations,
- facilitating RAP implementation where required,
- oversight of contractors and service providers.

1.3.2 African Development Bank (AfDB) -- Financier & Safeguard Authority

The African Development Bank is the primary financier of the Lagos State Health Project and the lead institution responsible for enforcing environmental and social safeguards. Under the AfDB ISS (2023), the LSHP is classified as a Category 1 programme due to:

- multi-site footprint,
- new construction activities,
- potential land acquisition and economic displacement,
- sensitive environmental settings,
- public health infrastructure risks.

AfDB's responsibilities include:

- review and clearance of ESIA and RAP documents,

- ensuring compliance with OS1 (Environmental Assessment), OS2 (Involuntary Resettlement), OS3 (Biodiversity), OS4 (Pollution Prevention), and OS10 (Stakeholder Engagement),
- conducting supervision missions and BTOR reviews,
- monitoring implementation of ESMP and RAP actions,
- ensuring that mitigation measures are adequately funded and executed.

AfDB's involvement ensures that the project meets international best practice for environmental and social sustainability.

1.3.3 Environmental & Social Consultant -- Multiple Development Services (MDS)

Multiple Development Services (MDS) is the environmental and social consultant appointed to prepare the ESIA, RAP, ESMP, and associated safeguard instruments for the LSHP. MDS conducted the feasibility-level screening (2025) and reconnaissance assessments (2026) that informed the project typology and safeguard categorisation.

MDS is responsible for:

- preparing the ESIA for all 29 PHC facilities,
- conducting baseline studies, stakeholder engagement, and impact assessment,
- preparing RAPs for sites triggering AfDB OS2,
- developing the consolidated ESMP and monitoring framework,
- supporting regulatory submissions to FMEnv and LASEPA,
- advising the project owner on safeguard compliance during implementation.

MDS also provides technical guidance to contractors and supervising engineers to ensure that mitigation measures are integrated into construction and operational activities.

1.3.4 Other Supporting Entities

- **Federal Ministry of Environment (FMEnv):** The statutory regulator responsible for ESIA approval under the EIA Act CAP E12 LFN 2004. It issues the ESIA certification and monitors overarching project compliance.
- **National Environmental Standards and Regulations Enforcement Agency (NESREA):** The federal agency responsible for enforcing all national environmental standards, regulations, policies, and guidelines throughout the project lifecycle.
- **Lagos State Environmental Protection Agency (LASEPA):** The state-level regulator tasked with environmental compliance, pollution control, and continuous monitoring. LASEPA directly oversees noise, air quality, waste management, and water quality compliance within the state.

- **LGAs/LCDAs:** Provide essential local oversight, community liaison, and support for the implementation of the Resettlement Action Plan (RAP) or Livelihood Restoration Plan (LRP). They facilitate site access, coordinate local security, and drive grassroots stakeholder engagement.
- **Contractors & Supervising Engineers:** Responsible for the day-to-day implementation of construction-phase mitigation measures. They are strictly required to comply with the Environmental and Social Management Plan (ESMP), national Occupational Health and Safety (OHS) standards, the updated AfDB ISS (2023), World Bank Group Environmental, Health, and Safety (WB EHS) Guidelines, and core International Labour Organization (ILO) standards.

Figure 1.5 presents the institutional framework for the LSHIP, illustrating the relationships among the key entities responsible for financing, regulation, implementation, monitoring, and community engagement.

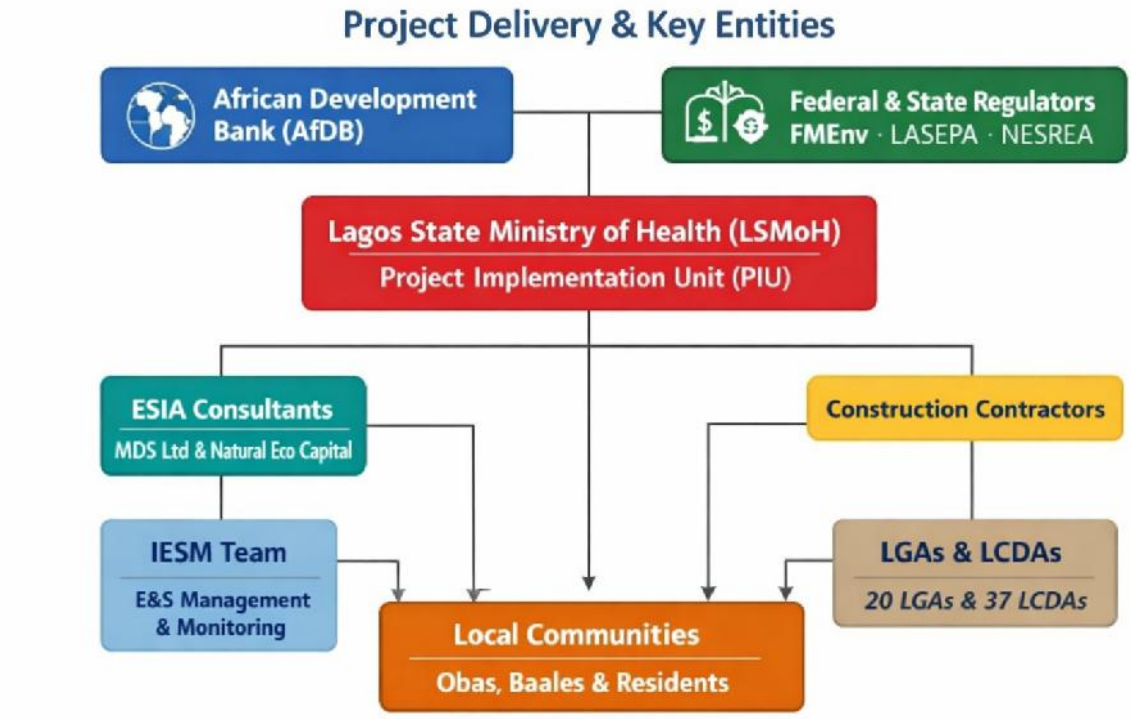


Figure 1.5: LSHIP Institutional Framework and Communication Structure

The framework positions the African Development Bank (AfDB) as the financing institution; the Federal Ministry of Environment (FMEnv), NESREA, and LASEPA as regulatory authorities; and the Lagos State Ministry of Health (LSMoH) through its Project Implementation Unit (PIU) as the implementing agency. It further highlights operational

linkages to the ESIA Consultants, Construction Contractors, the Independent Environmental and Social Monitor (IESM), and local communities, including traditional institutions such as Obas and Baales.

This institutional arrangement ensures coordinated oversight across federal, state, local, and community levels. Crucially, it guarantees that project governance aligns comprehensively with both national environmental legal frameworks and best international practices, ensuring strict adherence to WB EHS requirements and ILO labour standards throughout the project footprint.

1.4 -- ESIA Rationale, Objectives, And Scope

1.4.1 ESIA Rationale

The LSHIP requires a full ESIA for three reasons:

1. **Regulatory Mandate (Federal)** -- The EIA Act CAP E12 LFN 2004 (Section 2) and the Mandatory Study List include healthcare facilities of this scale (Federal Ministry of Environment, 2004). FMEnv has confirmed Category I status (Federal Ministry of Environment, 2025).
2. **Lender Requirement (AfDB)** -- The December 2025 Identification Mission confirmed Category 1 (High Risk) under the AfDB Integrated Safeguards System (ISS) 2023 due to:
    - Involuntary resettlement at six (6) sites (>200 persons at Agboju alone)
    - Environmentally sensitive locations (wetlands, waterlogged areas, coastal zones)
    - Presence of hazardous materials (asbestos suspected at 9 sites)
    - Community health and safety risks
    - Capacity gaps within the PIU
    - Labour influx risks (500-1,000 workers across the programme)
    - Gender-Based Violence and Sexual Exploitation, Abuse, and Harassment (GBV/SEA/SH) risks
    - Cumulative impacts with other developments in the project corridor
3. **International Good Practice** -- While IFC Performance Standards and Equator Principles IV provide useful guidance, the primary framework for this project is the AfDB ISS 2023 (Operational Safeguards OS1-OS10). The project also aligns with IFC Performance Standards (PS1-PS8), Equator Principles IV, WHO healthcare waste guidelines, and ILO labour standards as complementary good practice.

1.4.2 ESIA Objectives

The overarching objective of this Environmental and Social Impact Assessment (ESIA) is to serve as the principal due diligence instrument for the LSHIP within this axis. It will systematically evaluate all potential environmental and social consequences, design robust measures to avoid, minimize, and mitigate adverse impacts, and establish a clear management framework to ensure the project is implemented responsibly, sustainably, and in full compliance with safeguard standards.

Specific Objectives for this ESIA Report

1. **Identify and Assess Potential Impacts:** Systematically evaluate the environmental and social consequences of project activities across the four (4) designated PHC facilities within the Ibeju-Lekki Axis Group 5 (as part of the overarching 29-site LSHIP programme), addressing potential issues such as site-specific construction footprints, land disturbance, and local environmental sensitivities.
2. **Establish a Site-Specific Baseline:** Characterize the existing environmental conditions, including infrastructure integrity across the new construction and refurbishment sites (Agbowa, Ejirin, Solu-Alade, and Orimedu) and local socio-economic vulnerabilities.
3. **Develop Mitigation and Enhancement Measures:** Formulate technical and social instruments to prevent, minimize, or compensate for adverse impacts while maximizing project benefits like green energy transition and improved health equity.
4. **Ensure Regulatory Compliance:** Demonstrate full compliance with the updated AfDB Integrated Safeguards System (ISS, 2023), specifically Operational Safeguards OS1–OS10, as well as the FMEnv EIA Act CAP E12 LFN 2004, NESREA regulations, LASEPA requirements, and international good practice (IFC, WHO, ILO). Verify that all proposed activities at the four facilities comply with Lagos State environmental standards and LSHIP safeguards.
5. **Facilitate Stakeholder Engagement:** Provide a framework for continuous dialogue with the diverse communities across the cluster, ensuring their concerns are integrated into the project design and a Grievance Redress Mechanism (GRM) is established.
6. **Formulate an Environmental and Social Management Plan (ESMP):** Create a clear roadmap for the implementation of safeguards, defining responsibilities and budgets for mitigation actions during the pre-construction, construction, and operational phases.

7. **Manage Specific Hazardous Risks:** Develop targeted protocols for high-risk activities, particularly the safe handling, management, and disposal of medical and hazardous waste generated across the facilities.
8. **Address Social Safeguards:** Establish measures to mitigate risks associated with labor influx, specifically focusing on the prevention of Gender-Based Violence (GBV) and Sexual Exploitation, Abuse, and Harassment (SEA/SH).
9. **Prepare Safeguard Instruments:** Develop site-specific Environmental and Social Management Plans (ESMPs), Hazardous and Medical Waste Management Plans (HMWMPs), and GBV Action Plans for the facilities.
10. **Support Informed Decision-Making:** Provide regulators (FMEnv, LASEPA), the financier (AfDB), and stakeholders with comprehensive information to support project approval and implementation.

1.2.3 Project Coverage and Site Selection – Group 5

Lagos State operates a network of 326 public PHCs across its 20 LGAs and 37 LCDAs. From this network, the Lagos State Government, through the AfDB-supported LSHIP, has identified 29 PHCs for renovation or new construction. These 29 facilities represent approximately 9 percent of all public PHCs in the State and define the spatial footprint of the LSHIP.

The Epe/Ibeju-Lekki Axis (Group 5) comprises four PHCs. The selection and prioritisation of these PHCs were based on six criteria: structural integrity and infrastructure deficits; high service demand and population pressure; geographic equity; environmental and social vulnerability; administrative readiness; and alignment with State health strategies.

1.4.3 Scope of the ESIA Report

1. Geographical Scope

The LSHIP, as mentioned earlier is grouped into eight clusters, namely West Coast, Metropolitan Core, Ikorodu North, Ikorodu Axis, Epe / Ibeju-Lekki Axis, Ibeju-Lekki Coastal, Badagry West and Badagry North / Waterfront Fringe. This cluster-based grouping is used throughout the ESIA for baseline characterisation, impact assessment, stakeholder engagement, and ESMP development in relation to the different but complementary reports prepared for the various groups/clusters of the project sites.

This Report covers Group 5 -- Epe/Ibeju-Lekki Axis, a strategic coastal and developing corridor comprising Epe and Ibeju-Lekki LGAs and their environs. Four LSHIP project sites—Agbowa, Ejirin, Solu-Alade, and Orimedu PHCs—are located within this cluster, as shown in Figure 1.6.

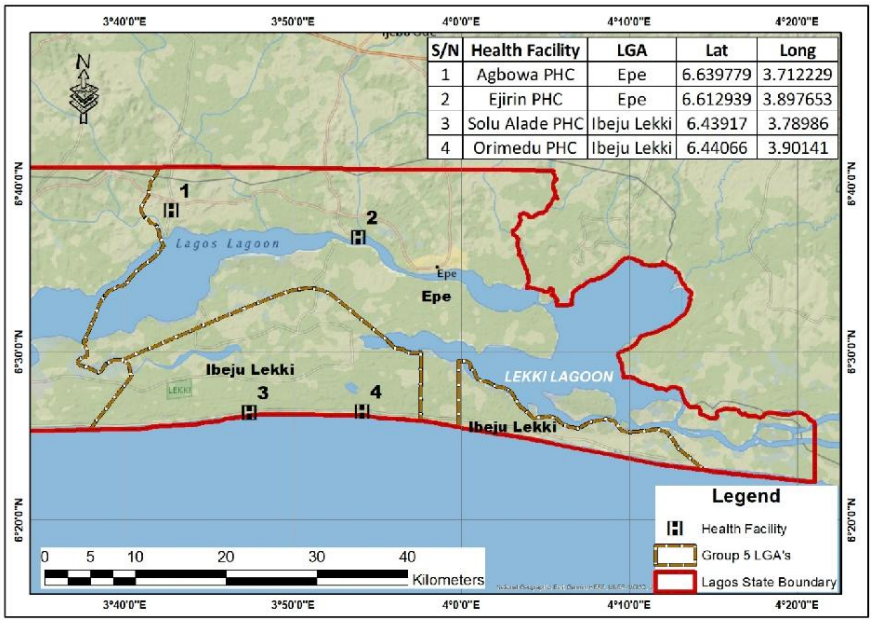


Figure 1.6 – Map showing location of the four project sites by Cluster

Source: Multiple Development Services (2026)

2. Environmental and Technical Scope

- **Baseline Characterization:** Establishing the current state of air quality, noise levels, soil composition, and hydrology across the Group 5 cluster (Agbowa, Ejirin, Solu-Alade, and Orimedu).
- **Hazardous Material Management:** Specific focus on the identification, safe handling, management, and disposal of hazardous and medical wastes generated across the facilities.
- **Climate and Energy:** Assessment of the transition to renewable energy through solar-hybrid installations and the project's resilience to local climate risks like flooding.
- **Waste Management:** Evaluation of construction debris disposal for new builds and refurbishments, alongside long-term medical waste logistics.

3. Social and Institutional Scope

- **Social Safeguards:** Identifying risks related to Labour Influx, with a specialized focus on preventing Gender-Based Violence (GBV) and Sexual Exploitation, Abuse, and Harassment (SEA/SH).
- **Stakeholder Engagement:** Mapping and consulting with diverse local communities, traditional leaders, and health workers across the Ibeju-Lekki axis to ensure local ownership.
- **Institutional Capacity:** Assessing the ability of implementing agencies to manage safeguards and identifying requirements for institutional strengthening.

- **Grievance Redress:** Establishing a formal Mechanism (GRM) to handle project-related complaints across the cluster.

4. Regulatory Framework Scope

- **National Compliance:** Adherence to the Nigeria Climate Change Act 2021 and Lagos State environmental laws.
- **International Standards:** The assessment triggers and follows the AfDB Operational Safeguards (OS1–OS10) and the IFC Performance Standards (PS1–PS8).

A structured overview of the facilities by LGA/LCDA, distinguishing between new construction and refurbishment sites for ease of reference and management is given below:

Facility & Location	**Scope / Status**	**Community Profile & Characteristics**	**Map Link**
PHC Agvowa (Agbowa)	Construction	Agbowa is a developing rural/semi-urban community within Ibeju-Lekki, characterized by agrarian and trading activities, expanding local settlements, and a growing demand for accessible primary healthcare services.	–
PHC Ejirin	Refurbishment	Ejirin is a historic coastal/riverine community with fishing and trading livelihoods, featuring traditional settlement patterns and high dependence on local health infrastructure.	–
PHC Solu-Alade	Refurbishment	Solu-Alade is a growing rural community in Ibeju-Lekki marked by community farming, fishing, and expanding infrastructural needs requiring enhanced primary care access.	–
PHC Orimedu	Construction	Orimedu is a coastal community along the Ibeju-Lekki corridor, characterized by fishing, artisanal activities, growing commercial presence, and terrain	–

		vulnerable to coastal environmental factors.	

The scope of the Environmental and Social Impact Assessment (ESIA) for the Primary Health Centres (PHCs) is defined by the project lifecycle and the specific environmental and social pillars critical to the Lagos State Health Infrastructure Project (LSHIP).

Figure 1.7 presents a project status dashboard integrating geospatial information with project- specific data for the Epe / Ibeju-Lekki Axis. The dashboard includes:

- A map of the coastal and developing corridor highlighting the cluster's key focus area.
- A panel listing the four PHC sites (Agbowa, Ejirin, Solu-Alade, and Orimedu) and their development status (refurbishment or construction).
- A data table containing GIS coordinates for each facility.

Figure 1.7 also situates the cluster within a broader development context by illustrating patterns of rapid peri-urban and coastal growth and associated infrastructure demands, providing a clear rationale for the planned interventions.

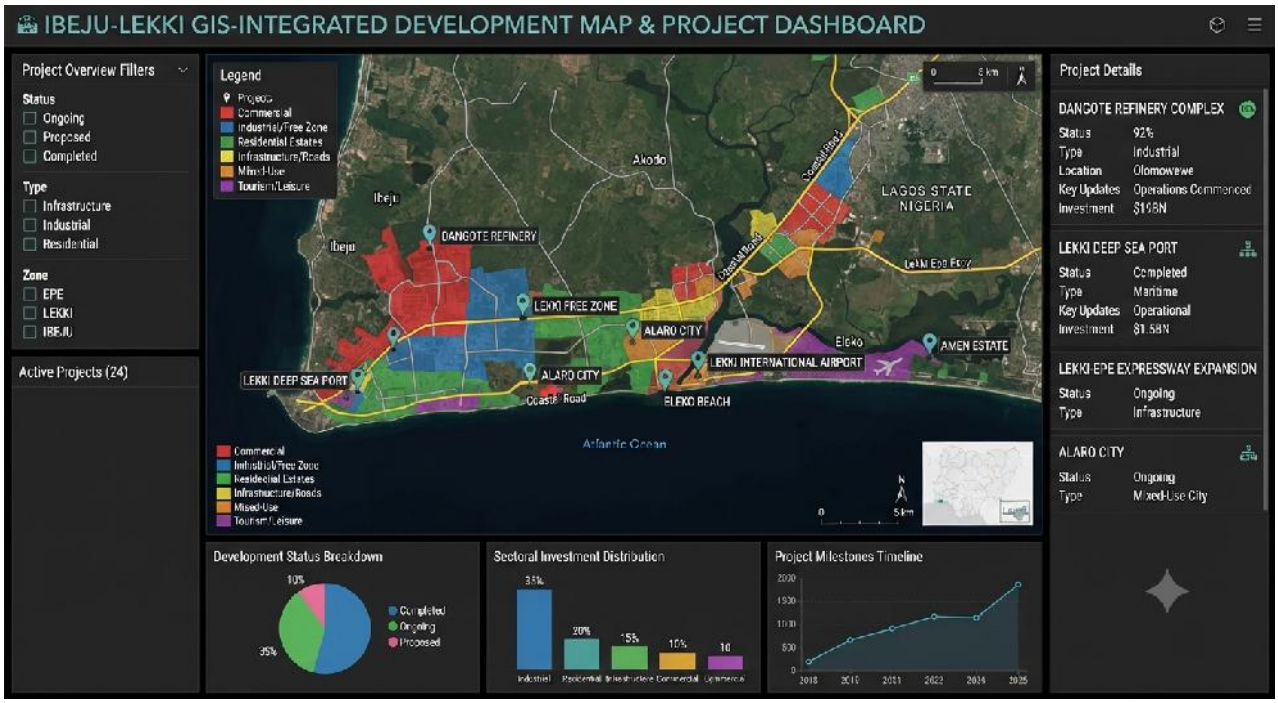


Figure 1.7: GIS-Integrated Development Map and Project Dashboard for Ibeju Lekki/ Epe

This document constitutes the ESIA report which covers Group 5 -- Epe/Ibeju-Lekki Axis of the project. The assessment includes four (4) Primary Healthcare Centres (PHCs) located across Epe and Ibeju-Lekki LGAs and their environs. The facilities comprise two refurbishment sites (Isolo and Oba Salami / or equivalent designated sites) and two

new-construction sites. All other LSHIP clusters are addressed in separate standalone ESIA reports.

Temporal Scope

The ESIA evaluates impacts across all project phases:

- **Pre-construction:** site verification, design finalization, permitting, mobilization
- **Construction:** civil works, structural works, MEP installation, equipment installation
- **Operation:** clinical services, waste management, water and energy systems, infection control
- **Decommissioning:** long-term framework only (not anticipated within 50+ years)

Thematic Scope

The assessment covers the following environmental and social components:

- **Physical Environment:** air quality, noise/vibration, soils, erosion, water quality, drainage, waste
- **Biological Environment:** vegetation, habitats, flora/fauna, biodiversity (incl. IFC PS6), ecosystem services
- **Socio-Economic Environment:** land acquisition/resettlement (where applicable), livelihoods, community health and safety, labour conditions, GBV/SEA/SH, cultural heritage
- **Cross-Cutting:** cumulative impacts, climate vulnerability, emergency preparedness, institutional capacity

Exclusions

This ESIA does not cover PHC facilities in other LSHIP clusters:

- **Badagry Axis:** APA, Igbogbele, Farasime, Ibereko, Gberefu
- **Ikorodu North Axis:** Omolaiye, Eruwen, Olorunda, Agura
- **Mainland / Yaba Axis:** Ojodu, Otumara, Isolo, Oba Salami, Oridilu
- **Alimosho / Kosofe Axis:** Bada, Ogbomosotedo, Agboyi

Figure 1.8 provides the scope for the Epe / Ibeju-Lekki Axis cluster with the specific components and detailed exclusions.

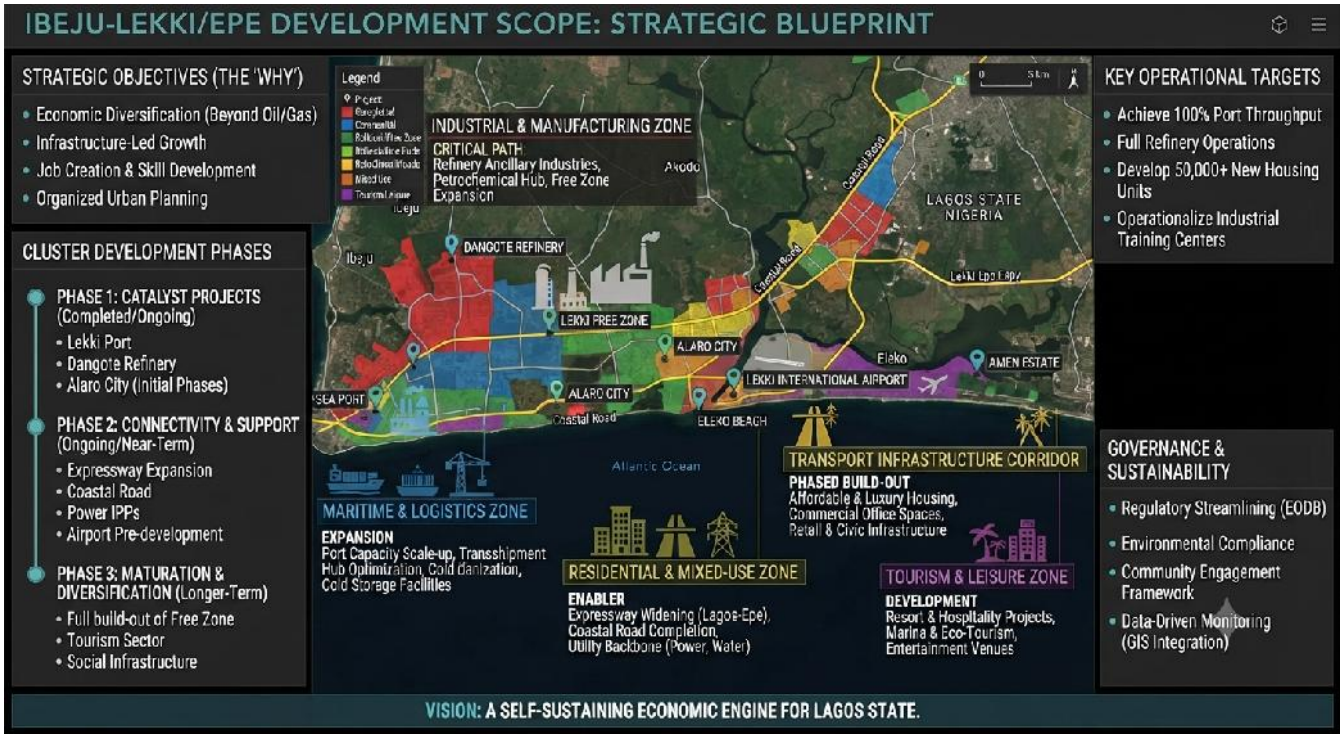


Figure 1.8: Scope for the Ibeju Lekki/ Epe Cluster

1.5 Regulatory Triggers, ESIA Process Flow and Guiding Principles

1.5.1 Regulatory Triggers

The regulatory triggers applicable to the Lagos State Health Infrastructure Project (LSHIP) define the statutory and safeguard obligations that guide the scope and depth of this ESIA. These triggers arise from Nigerian environmental legislation and the African Development Bank (AfDB) Integrated Safeguards System (ISS), and they determine the level of assessment required for each facility. A summary of the specific triggers relevant to the Ibeju-Lekki Axis Group 5, highlighting the regulatory basis and the implications for the project is in Table 1.3:

Table 1.3: Regulatory Triggers Applicable to the Ibeju Lekki

Trigger	Regulation	Relevance to each PHC
Environmental Assessment	EIA Act Cap E12 LFN 2004	Mandatory for all 29 sites to assess impacts of new construction (10 sites, including Agbowa and Orimedu) and refurbishments (19 sites, including Ejirin and Solu-Alade) on the local ecosystem.
Hazardous Waste	Harmful Waste Act Cap H1 LFN 2004	Applicable to sites requiring refurbishment (such as Ejirin and Solu-Alade) to manage the removal of hazardous materials and medical wastes.

Climate Resilience	Nigeria Climate Change Act 2021	Relevant to all sites as they transition to solar-hybrid power and implement climate-smart infrastructure.
Waste Management	Lagos State Environmental Law (2017)	Governs the disposal of medical waste and construction debris across all clusters to prevent environmental contamination.
Social Safeguards	AfDB Operational Safeguards (OS1–OS10)	Triggers mandatory assessments for labour influx, GBV, and community health across the 8 geographical groups.
Labor Standards	Labour Act Cap L1 LFN 2004	Applicable to the management of site workers, ensuring fair wages and safety during the construction phase of all 29 facilities.
International Benchmarking	IFC Performance Standards (PS1–PS8)	Sets the global standard for managing environmental and social risks, including resource efficiency and land acquisition.

These triggers collectively justify the project's classification as Category 1 (AfDB) and Category I (FMEnv), thereby requiring a full ESIA.

1.5.2 ESIA Process Flow

Figure 1.9 presents the Environmental and Social Impact Assessment (ESIA) process required to achieve regulatory compliance under the FMEnv EIA Act CAP E12 LFN 2004 and the AfDB Integrated Safeguards System (ISS). The process follows a structured and sequential pathway designed to ensure that environmental and social risks are identified early, assessed rigorously, and managed effectively.

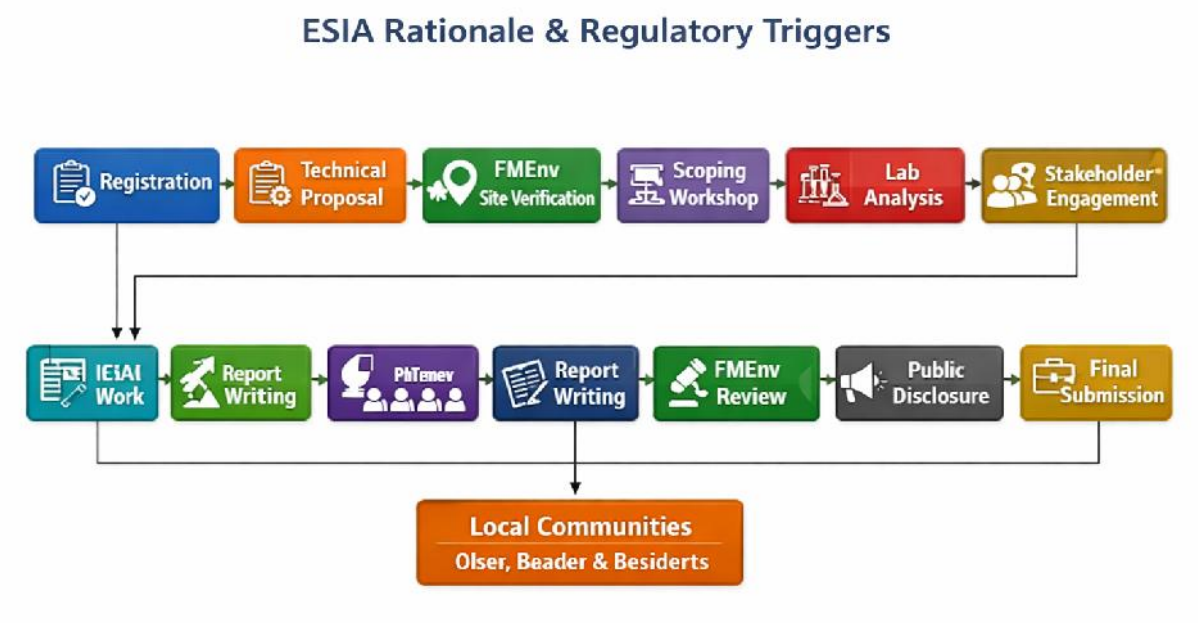


Figure 1.9: ESIA Process Flowchart

The ESIA process comprises the following steps:

1. Registration with FMEnv
2. Technical Proposal Submission
3. FMEnv Site Verification
4. Scoping Workshop (stakeholder-inclusive)
5. Fieldwork and Data Collection
6. Laboratory Analysis
7. Stakeholder Engagement
8. Report Writing and Draft ESIA Submission
9. FMEnv Review and Panel Assessment
10. Public Disclosure (120-day public review period, because it is category 1 project, in compliance with AfDB standards)
11. Final Submission
12. Issuance of EIA Certificate

This process ensures that the ESIA meets national regulatory requirements and aligns with international best practice for high-risk, multi-site infrastructure projects.

1.5.3 Guiding Principles

The LSHIP is guided by a set of core principles that shape all phases of planning, assessment, construction, and operation. These principles are consistent with the IFC Performance Standards, the AfDB Integrated Safeguards System, and global best practice for sustainable healthcare infrastructure.

- Sustainability -- Integrating environmental, social, and economic considerations, including green building design, local hiring, and long-term facility resilience.
- Precautionary Principle -- Where uncertainty exists, the project adopts a conservative approach (e.g., asbestos surveys prior to demolition; treating wetlands as potential Critical Habitat until confirmed otherwise).
- Mitigation Hierarchy -- Applying the sequence: Avoid → Minimise → Restore → Offset.
- Inclusiveness -- Ensuring equitable access and participation for women, persons with disabilities, youth, riverine communities, and informal settlers.
- Transparency -- Ensuring public disclosure of ESIA documents (21 days FMEnv; 120 days AfDB), including a Non-Technical Summary in English and Yoruba.
- Accountability -- Enforcing contractor obligations, Independent Environmental and Social Monitor (IESM) audits, and sanctions for non-compliance.
- Polluter Pays Principle -- Contractors bear full responsibility for spill response, waste disposal, and site restoration.
- Continuous Improvement -- Annual ESMP reviews informed by monitoring data, incident reports, and lessons learned.

1.5.4 Field Data Gathering and Attestation

In compliance with FMEnv requirements, the field data gathering for this ESIA was conducted with the participation and oversight of officials from the Federal Ministry of Environment. This ensures that the baseline data and environmental assessments meet the regulatory standards required for EIA Certificate issuance by FMEnv Abuja. The below are the Field Data Gathering Details is presented below:

Field Data Gathering Details:

Item	Details
Dates of Field Work	1—10 April 2026
Season	Dry Season
FMEnv Oversight	Confirmed
Sampling Points	3 per PHC site (12 sampling points total)
Parameters Sampled	Air quality, noise, groundwater, soil, vegetation, socio-economic

Field Attestation Register:

The following government officials from the Federal Ministry of Environment, Lagos State Ministry of Environment and Water Resources participated in the field data gathering and Stakeholders engagement meetings:

S/N	Name	Position
1	Okwesa Francesca	FMEnv., Abuja (Representative of the Hon. Minister of Environment)
2	Adenaike Olubunmi	FMEnv Lagos Office, (Controller)
3	Oshimowo T. Bolaji	Lagos State Ministry of Environment & Water Resources
4	Oyawoye Anuoluwa	Lagos State Ministry of Environment & Water Resources
5	Shittaboy Tolulope	FMEnv, Zonal Office Lagos
6	Kehinde Biok T	FMEnv, Zonal Office Lagos
7	Eberechukwu E.U	FMEnv, Zonal Office Lagos
8	Engr. Braimoh	Lagos State Primary Healthcare Board

1.6 Policy, Legal & Institutional Framework

This ESIA has been prepared in accordance with:

- **Primary Framework**: **AfDB Integrated Safeguards System (ISS) 2023/2024** (Operational Safeguards OS1-OS10)
- **National Regulatory Framework**: FMEnv EIA Act CAP E12 LFN 2004, NESREA Regulations, Lagos State Environmental Laws
- **Complementary Good Practice**: IFC Performance Standards (PS1-PS8), Equator Principles IV, WHO Guidelines, ILO Conventions

Note: Where national regulations are less stringent than the AfDB ISS 2023/2024, the Bank's standards shall take precedence to ensure full compliance.

1.6.1 Nigerian Federal Framework

Table 1.4 summarizes the key federal laws and regulations applicable to LSHIP. Where national law is silent or weaker, AfDB standards apply.

Table 1.4 -- Nigerian Federal Regulatory Framework

Law / Regulation	Key Provisions	Relevance to LSHIP	Compliance Action
EIA Act Cap E12 LFN 2004 (Federal Ministry of Environment, 2004)	Section 2 -- Mandatory EIA for prescribed activities; Category I designation	Project triggers Category I (mandatory full EIA)	Registration (Form EIA 1) submitted; ESIA prepared; public disclosure to follow; EIA Certificate to be obtained
NESREA Act 2007 (National Environmental Standards and Regulations Enforcement Agency, 2007)	Enforcement of air, water, noise, waste standards	Construction and operation must meet NESREA limits	Monitoring plan includes NESREA limits; exceedances trigger corrective action
National Environmental (Air Quality Control) Regulations, 2021 (National Environmental Standards and Regulations Enforcement Agency, 2021)	PM2.5 (25 µg/m³), PM10 (50 µg/m³), NO2 (40 µg/m³), SO2 (20 µg/m³), CO (10 mg/m³)	Dust from earthworks, vehicle emissions, generator operation	Water spraying, covered trucks, low-sulphur diesel, real-time monitoring
National Environmental (Noise Standards and Control) Regulations, 2009 (National Environmental Standards and Regulations	Residential day 55 dB(A), night 45 dB(A); Commercial 65/55; Industrial 70/60	Construction noise near schools and residential areas	Restrict hours (7:00--18:00), temporary barriers, community notification

Law / Regulation	Key Provisions	Relevance to LSHIP	Compliance Action
Enforcement Agency, 2009)			
National Environmental (Surface and Groundwater Quality Control) Regulations, 2011 (National Environmental Standards and Regulations Enforcement Agency, 2011)	pH (6.5--8.5), BOD (6 mg/L), coliforms (0 CFU/100ml), iron (0.3 mg/L), copper (0.01 mg/L)	Wastewater discharge, stormwater runoff, dewatering	No untreated discharge; silt fences; septic tanks
National Environmental (Sanitation and Wastes Control) Regulations, 2009 (National Environmental Standards and Regulations Enforcement Agency, 2009)	Proper waste management, segregation, storage, collection, disposal; prohibition of open burning	Construction waste, medical waste, hazardous waste (asbestos)	Waste Management Plan; HMWMP; LAWMA collection; licensed disposal
Harmful Waste Act Cap H1 LFN 2004 (Federal Government of Nigeria, 2004)	Prohibits import, transport, dumping, deposit of harmful waste in air, land, or water; criminal penalties	Asbestos (*[insert number]* sites), chemical waste, pharmaceutical waste, infectious waste	Licensed asbestos abatement; double-bagging; labeled transport; hazardous waste landfill

Law / Regulation	Key Provisions	Relevance to LSHIP	Compliance Action
Land Use Act Cap L5 LFN 2004 (Federal Government of Nigeria, 2004)	Sections 28-29 -- Compulsory acquisition; Section 30 -- Compensation; Section 36 -- Occupation without title	Resettlement at Agura, Olorunda	RAPs with compensation at full replacement cost; livelihood restoration
Violence Against Persons (Prohibition) Act 2015 (Federal Government of Nigeria, 2015)	Sections 1-10 -- Prohibits sexual violence, exploitation, harassment	GBV/SEA/SH risks during construction and operation	GBV Action Plan; Code of Conduct; referral pathways; survivor-centered response
National Biosafety Management Agency Act 2015 (National Biosafety Management Agency, 2015)	Sections 12-18 -- Biosafety permits, containment measures, inspections	BSL-3/BSL-4 laboratory (IDRI Yaba)	Biosafety permit; containment verification; NCDC certification; EPRP
Child Rights Act 2003 (Federal Government of Nigeria, 2003)	Prohibits child labour, trafficking and exploitation; fixes 18 years as age of majority	Prohibits engagement of minors on construction sites	Contractor CESMP to mandate age verification at recruitment
Labour Act Cap L1 LFN 2004 (Federal Government of Nigeria, 2004)	Regulates terms and conditions of employment, wages, working hours	Governs engagement, remuneration and working conditions of construction workers	Written contracts for all workers; Labour Management/Influx Plan

Law / Regulation	Key Provisions	Relevance to LSHIP	Compliance Action
Employee's Compensation Act 2010 (Federal Government of Nigeria, 2010)	Provides for compensation to employees for occupational injuries	Mandates compensation arrangements for construction-phase OHS incidents	Contractor to register workers under the NSITF/ECA scheme
Endangered Species (Control of International Trade and Traffic) Act Cap E9 LFN 2004, as amended (Federal Government of Nigeria, 2004)	Conserves and protects endangered species of wild fauna and flora	Relevant where site preparation/clearing could affect protected species or habitats	Biodiversity screening; chance-find procedure for protected species

1.6.2 State-Level Environmental Permit Requirements

Table 1.5 provides a summary of the key environmental permits and approvals required at the state level for the implementation of the LSHIP, identifying the responsible regulatory agencies, the specific permits or clearances to be obtained, and the corresponding status or actions needed to achieve compliance.

Table 1.5 -- State-Level Environmental Permit Requirements

Responsible Agency	Required Permits / Approvals	Status / Action
LASEPA (Lagos State Environmental Protection Agency, 2017)	State EIA concurrence; waste management permit; water abstraction permit; air quality permit (generators, incinerator); noise permit (if night work); asbestos abatement permit	To be obtained prior to construction commencement. Permit applications to be submitted within 30 days of EIA Certificate.
LAWMA (Lagos State Waste Management Authority, 2019)	Waste collection agreement; medical waste disposal agreement; hazardous waste manifest system	To be executed for each facility.
Lagos State Ministry of Physical Planning (Lagos State Government, 2022)	Building plan approval; planning permit	To be obtained for new construction sites.

Responsible Agency	Required Permits / Approvals	Status / Action
LASWARCO (Lagos State Water Regulatory Commission, 2018)	Borehole drilling permit; water abstraction license	To be obtained for new boreholes.
Lagos State Safety Commission (LSSC) (Lagos State Safety Commission Law, 2011)	Construction-site safety registration and Safety Compliance Certification	Register all construction sites with the LSSC; obtain Safety Compliance Certification.

The Contractor shall obtain all state-level permits prior to commencement of activities in each respective LGA.

1.6.3 AfDB Operational Safeguards (OS1-OS10)

The following AfDB ISS 2023 Compliance Mapping is structured specifically for project sites where operational safeguards (OS) were triggered based on site-specific environmental and social baseline studies identified in the Epe / Ibeju-Lekki Axis ESIA report.

Table 1.6: AfDB ISS 2023/2024 Compliance Mapping (Site-Specific Triggers)

AfDB Operational Safeguard (2023/2024)	Triggered Sites / Context	Compliance Action / Mitigation Measure	Report Reference
OS 1: Environmental and Social Assessment	All sites (Category 1 - High Risk)	Conduct full ESIA; implement ESMP; establish monitoring and reporting framework with quarterly reporting to AfDB.	Chapter 1, 5, 7
OS 2: Labour & Working Conditions	All sites (Labour influx/OHS); Agbowa, Ejirin, Orimedu, Solu-Alade (GBV/SEA/SH risk)	Adhere to labour standards (ILO Conventions); implement OHS Plan, GBV/SEA/SH Action Plan (Code of Conduct, training, confidential reporting, referral pathways, sanctions); maintain Worker GRM; local hiring target ≥50% unskilled from LGAs.	Chapter 7, Appendix 2.4
OS 3: Resource Efficiency &	Ejirin, Solu-Alade (Legacy Asbestos -	Asbestos: Implement standard Asbestos Management Plan	Section 3.4, Appendix

AfDB Operational Safeguard (2023/2024)	Triggered Sites / Context	Compliance Action / Mitigation Measure	Report Reference
Pollution Prevention	known ACMs in older structures); All sites (Medical waste/wastewater, air emissions)	(AMP) - licensed wet removal, double-bagging, air monitoring (PCM/TEM), hazardous waste disposal (Appendix 6). No separate "confirmation survey" required as ACMs are a known legacy material consistent with findings. Medical Waste: Implement WHO-compliant HMWMP (colour-coded segregation, autoclaving, LAWMA disposal). Wastewater: Lined septic systems; no untreated discharge. Air Emissions: Dust suppression (water spraying), covered trucks, low-sulphur diesel.	6, Chapter 7
OS 4: Community Health, Safety & Security	All sites (Community safety risks; traffic; coastal/lagoon hazards)	Traffic Management Plan (Appendix 11); Emergency Preparedness and Response Plan (EPRP - fire, flood, spill, medical, GBV, security incident); Community Liaison Officers; site fencing and lighting; security protocols.	Chapter 7, Appendix 11

AfDB Operational Safeguard (2023/2024)	Triggered Sites / Context	Compliance Action / Mitigation Measure	Report Reference
OS 5: Land Acquisition, Restrictions on Land Use & Involuntary Resettlement	Group 5 sites (Screening compliance verified / Zero displacement - no PAPs identified)	OS5 NOT TRIGGERED. No Resettlement Action Plan (RAP) required for Group 5. The Epe/Ibeju-Lekki Axis confirms no PAPs. Precautionary screening during construction; GRM available for any emerging claims.	Section 1.9.3, Section 4.8
OS 6: Biodiversity & Ecosystem Services	Solu-Alade, Orimedu, Agbowa, Ejirin (Modified Ecosystems - coastal/wetland interfaces)	Reclassified as Modified Ecosystems under AfDB OS6 (2024). Sites are located within peri-urban settlements, farmlands, and coastal community infrastructure with secondary regrowth and degraded wetland fringes. No Critical Habitat designation applies. Mitigation: Apply standard 30-50m wetland/coastal buffers; sediment and erosion controls (silt fences, sediment traps); water quality monitoring (TSS, pH, DO, hydrocarbons); progressive revegetation with native species; no Critical Habitat offset required.	Section 4.6.1, Table 5.17

AfDB Operational Safeguard (2023/2024)	Triggered Sites / Context	Compliance Action / Mitigation Measure	Report Reference
OS 8: Cultural Heritage	All sites (Potential chance finds during excavation)	Chance Finds Procedure (Appendix 16); worker training on identification and reporting; immediate stop-work if finds are encountered; coordination with Lagos State Museum (LASM) and National Commission for Museums and Monuments (NCMM).	Appendix 16
OS 10: Stakeholder Engagement & Information Disclosure	All sites	Stakeholder Engagement Plan (SEP - Chapter 9); Grievance Redress Mechanism (GRM - 48-hour acknowledgement, 14-day resolution); 120-day public disclosure (Category 1); Non-Technical Summary (English and Yoruba); quarterly reporting to AfDB.	Chapter 9

Assessment and Management of Environmental & Social Risks (AfDB OS1--OS10)

Figure 1.10 illustrates the Environmental and Social (E&S) Risk Assessment and Management Framework adopted for the Lagos State Health Infrastructure Project (LSHIP) -- Epe / Ibeju-Lekki Axis, in alignment with the African Development Bank's Integrated Safeguards System (ISS, 2024).

The framework reflects a structured, multi-stage process consisting of Risk Screening, Risk Identification, Risk Significance Rating, Mitigation Hierarchy Application, Residual Risk Evaluation, and Risk Management Planning. This process ensures that all environmental and social risks associated with the four PHC facilities (Agbowa, Ejirin, Solu-Alade, and Orimedu) are systematically assessed and managed in accordance with AfDB OS1--OS10.

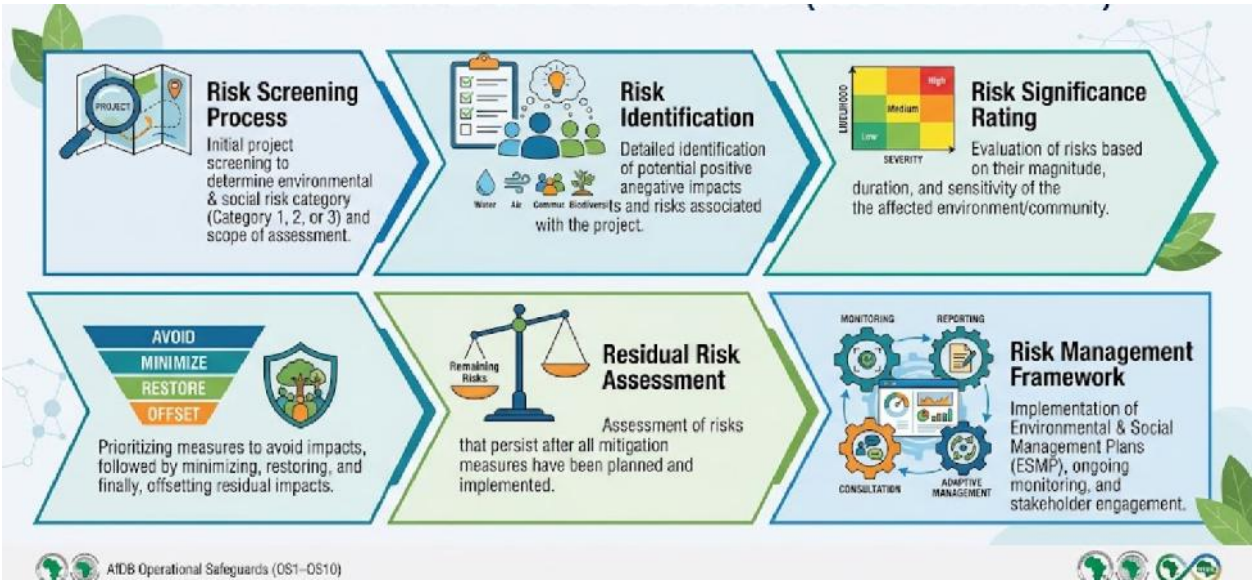


Figure 1.10: Assessment and Management of Environmental & Social Risks (AfDB OS1--OS10)

Figure 1.10 presents the full E&S Risk Assessment and Management Framework used for the LSHIP Epe / Ibeju-Lekki Axis, demonstrating compliance with AfDB OS1--OS10 and FMEnv requirements. It outlines the sequential process of risk screening, identification, significance rating, mitigation hierarchy, residual risk evaluation, and integration into the ESMP and overall project risk management system.

1.6.4 International Good Practice Standards

Where Nigerian law is silent or weaker, the following international standards are adopted (International Finance Corporation, 2012; World Health Organization, 2014; International Labour Organization, 2019; Equator Principles Association, 2020; United Nations, 2011; Task Force on Climate-related Financial Disclosures, 2017):

- IFC Performance Standards (PS1-PS8) and EHS Guidelines
- WHO Safe Management of Wastes from Health-Care Activities (2nd Edition, 2014)
- WHO Core Components of Infection Prevention & Control
- ILO Conventions 155, 161, 187, 148, and core labour standards
- Equator Principles IV (EP4)
- UN Guiding Principles on Business and Human Rights (UNGPs)
- Task Force on Climate-related Financial Disclosures (TCFD)

1.7 Contractor ESMS Requirements

All contractors must comply with the following ESMS components, as depicted in Figure 1.11. These requirements will be included in bidding documents and contracts (African Development Bank, 2023).

- **CESMP (Contractor ESMP)** -- Dust control, noise management, water quality protection, waste management (including hazardous), spill prevention, erosion control, labour influx management, OHS plan, GBV Code of Conduct, community liaison, GRM.
- **Occupational Health and Safety** -- PPE, training, medical surveillance, incident reporting, first aid, fire safety (International Labour Organization, 1981).
- **Labour Management** -- Written contracts, prohibition of child/forced labour, non-discrimination, timely payment, worker accommodation standards, worker GRM (International Labour Organization, 1998).
- **Community Safety** -- Traffic Management Plan, access management, fencing, community liaison, emergency response.
- **GBV/SEA/SH Prevention and Response** -- Code of Conduct (signed by all workers), induction and monthly training, confidential reporting channels, survivor-centered response, sanctions (International Finance Corporation, 2020).
- **Waste Management** -- Segregation, asbestos abatement (licensed), hazardous waste disposal, waste manifests.
- **Security Management** -- VPSHR training, proportional use of force, incident reporting (Voluntary Principles on Security and Human Rights, 2000).
- **Reporting** -- Weekly E&S reports to PIU, incident reports within 24 hours.

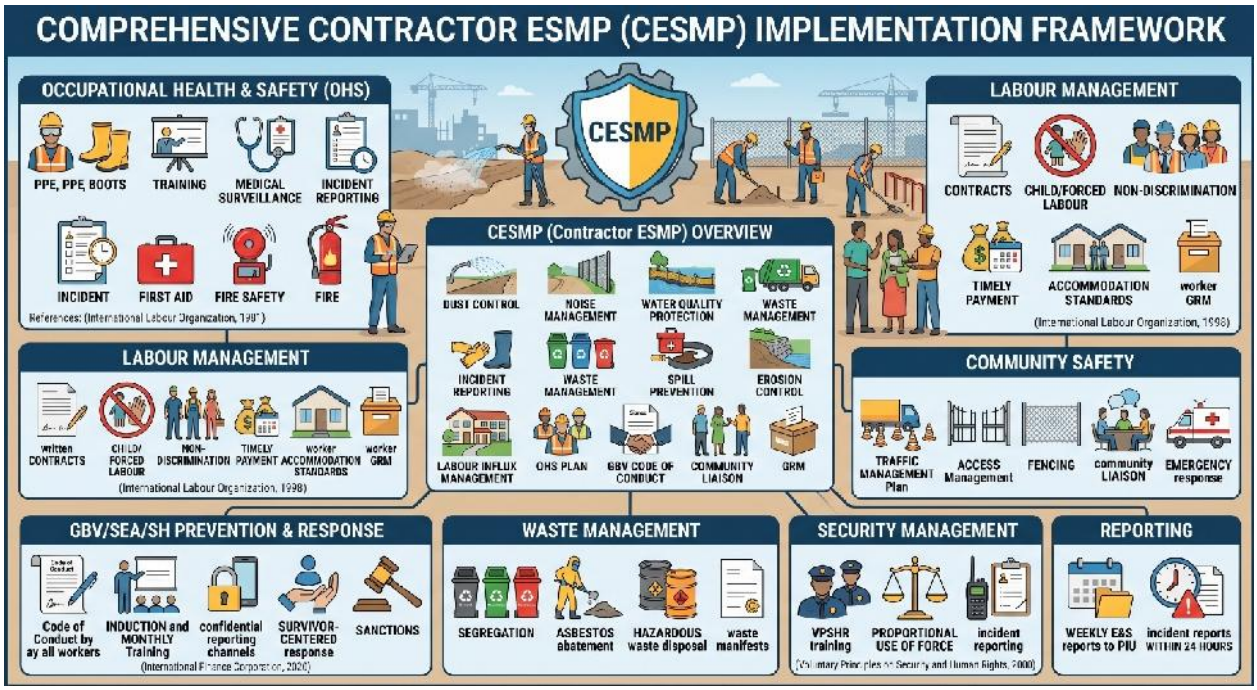


Figure 1.11: Contractor Compliance Requirements for ESMS Components

1.8 Project Risk Categorisation

FMEnv Category I -- Mandatory full EIA due to scale (29 facilities), sensitivity (wetlands, mangroves), magnitude of impacts (resettlement, asbestos, labour influx), public interest, and cumulative impacts (Federal Ministry of Environment, 2004).

AfDB Category 1 (High Risk) -- Confirmed by December 2025 Identification Mission based on (African Development Bank, 2025):

1. Multi-site complexity (29 facilities).
2. Involuntary resettlement at 6 sites (>200 PAPs at Agboju).
3. Environmentally sensitive sites (Omolaiye waterlogged area, wetlands).
4. Lack of dedicated E&S capacity within the PIU (institutional weakness).
5. Water crossings requiring boat transport (Gberefu, Agboyi).
6. Asbestos at 9 sites and improper waste management at Agbowa.

IFC Category A -- Mirrors AfDB Category 1 (International Finance Corporation, 2012).

Equator Principles IV Category A -- Requires independent ESIA, climate risk assessment (TCFD-aligned), human rights due diligence, independent monitoring (IESM), and 120-day public disclosure (Equator Principles Association, 2020).

Risk Management Approach:

For this Category 1 project, the following enhanced risk management measures are required:

Risk Area	Enhanced Measure
ESIA	Full ESIA with comprehensive baseline data, impact assessment, and mitigation
Resettlement	Full RAPs with independent valuation, compensation at full replacement cost, livelihood restoration, vulnerability support
Biodiversity	Critical Habitat screening; if confirmed, biodiversity offset (net gain, 1:1 to 3:1 ratio)
Hazardous Materials	Comprehensive HMWMP; licensed asbestos abatement; waste manifests
Labour and GBV	Labour Influx Management Plan; GBV/SEA/SH Action Plan; Code of Conduct; referral pathways
Independent Monitoring	IESM quarterly audits (unannounced, 20% of active sites per quarter)
Disclosure	120-day public disclosure (AfDB)

1.9 Involuntary Resettlement Integration (ESS5/PS5)

No physical displacement was identified across the four project sites. Baseline resettlement screening confirmed that no residential structures, businesses, or farmlands are present within the project footprints at Agbowa, Ejirin, Solu-Alade, or Orimedu. All parcels are government-owned and already gazetted, enabling project implementation without triggering a Resettlement Action Plan (RAP) or Livelihood Restoration Plan (LRP).

1.10 Climate Alignment (Paris Agreement, TCFD, Nigeria's NDC)

1.10.1 Climate Hazard Mapping

Table 1.7 and figure 1,12 below provides the key climate-related hazards identified across the project sites, highlighting locations with elevated exposure and presenting projected changes under the 2050 high-emissions scenario (RCP 8.5) (Nigerian Meteorological Agency, 2024; Intergovernmental Panel on Climate Change, 2021; Nigerian Institute for Oceanography and Marine Research, 2023).

Table 1.7 -- Climate Hazard Mapping

Hazard	**High-Risk Sites**	**Projected Change (2050, RCP 8.5)**
Flooding (pluvial and fluvial)	Solu-Alade, Orimedu, Agbowa	+30% rainfall intensity; 1:100-year storm becomes 1:30-year (Intergovernmental Panel on Climate Change, 2021)
Coastal erosion / sea-level rise	Solu-Alade, Orimedu (Epe / Ibeju-Lekki Axis)	Sea-level rise 0.2-0.5 m; increased storm surge (Intergovernmental Panel on Climate Change, 2021)
Heatwaves	All urban and coastal sites	+2-3^{0}C; >40°C days increase from 10/year to 60/year (Nigerian Meteorological Agency, 2024)
Extreme rainfall / storms	All sites	+20-30% intensity (Intergovernmental Panel on Climate Change, 2021)

Figure 1.12 presents a composite climate-hazard map of Lagos State, illustrating areas exposed to flooding, erosion, and coastal inundation, overlaid with the locations of the LSHIP project sites to support spatial risk screening and climate-resilience planning.

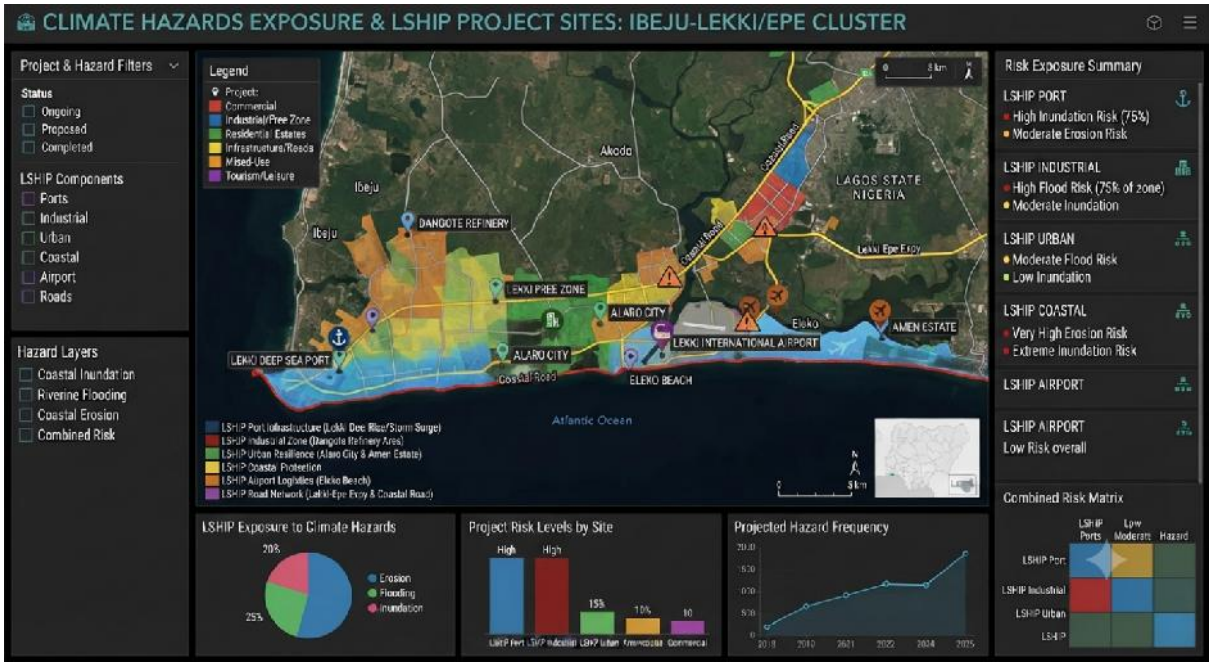


Figure 1.12 -- Map of climate hazards (flooding, erosion, coastal inundation)

1.10.2 Adaptation Measures (Climate-Resilient Design)

All facilities will incorporate (Task Force on Climate-related Financial Disclosures, 2017; Federal Ministry of Environment, 2021):

- Oversized culverts and drainage -- designed for 1:100-year storm + 30% climate factor.
- Elevated electrical panels -- placed above projected flood levels.
- Flood-proofing -- elevated floor slabs where needed, flood barriers for critical equipment.
- Cool roofs -- reflective coating, heat-resistant materials.
- Water security -- rainwater harvesting (5,000-10,000 L storage per PHC), borehole with UV filtration.
- Energy resilience -- Solar PV + battery storage (24-48 hours backup).

1.10.3 Alignment with Nigeria's NDC

Nigeria's NDCs commit to climate-resilient infrastructure and a 20% (47% conditional) unconditional GHG reduction by 2030 (Federal Ministry of Environment, 2021). LSHIP aligns through oversized drains, elevated electricals, solar PV (250–500 tCO_2e/year reduction), and energy-efficient design.

1.11 Gender, Inclusion & Vulnerability Framework

1.11.1 Gender Analysis & GBV Risk Screening

A gender analysis was conducted during reconnaissance. Key findings (Multiple Development Services, 2026; Lagos State Ministry of Women Affairs and Poverty Alleviation, 2023):

- Women face barriers to healthcare access (cost, transport, childcare, lack of female staff, safety concerns).
- Construction workforce is typically male-dominated; operation workforce (clinical) is predominantly female.
- GBV/SEA/SH risk is Medium to Medium-High across the Epe / Ibeju-Lekki Axis sites (Agbowa, Ejirin, Solu-Alade, and Orimedu) due to labour influx, poor lighting, isolated paths, economic vulnerability, and lack of confidential reporting mechanisms.

Figure 1.13 presents a gender and vulnerability map of Lagos State, highlighting GBV risk hotspots, the distribution of vulnerable groups---including women-headed households, the elderly, and persons with disabilities---and the locations of riverine and coastal communities in relation to the LSHIP project sites.

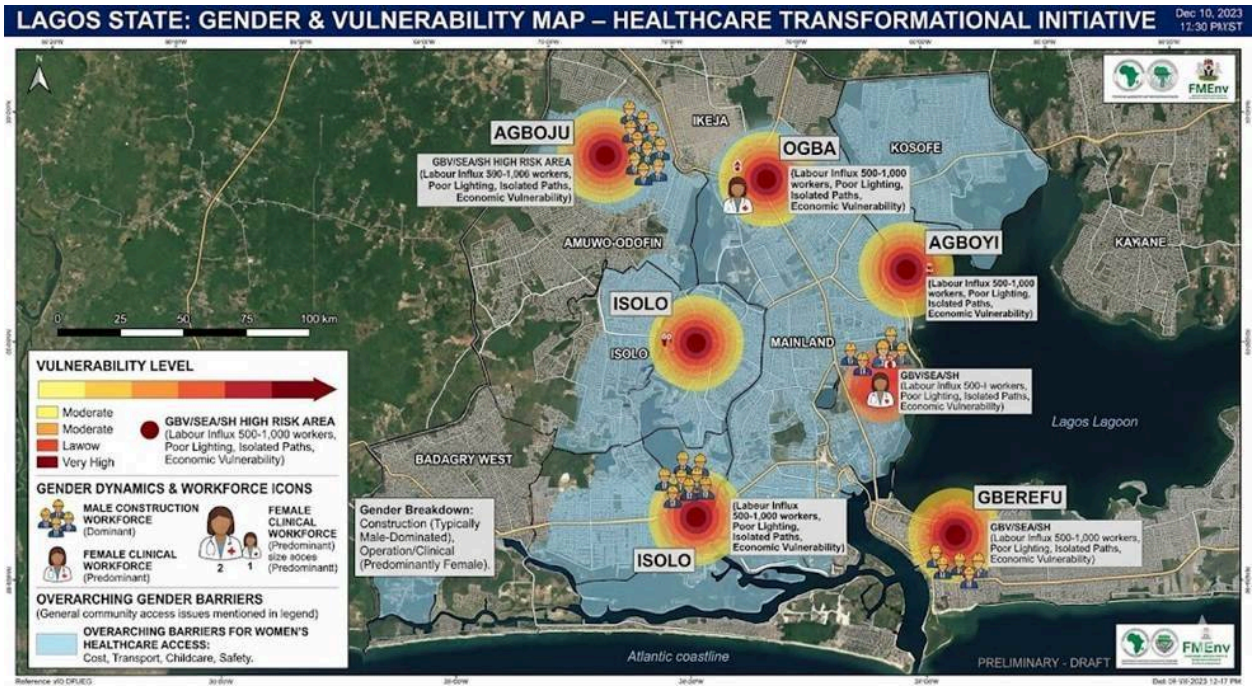


Figure 1.13 -- Gender and vulnerability map

1.11.2 AfDB OS5 -- GBV/SEA/SH Compliance

The LSHIP is fully aligned with AfDB Operational Safeguard 5 (OS5) -- Labour, Working Conditions, and Community Health & Safety (ISS 2023/2024), which includes specific requirements for:

1. **GBV/SEA/SH Prevention and Response** -- Zero-tolerance policy; Code of Conduct; training; confidential reporting; survivor-centered response; referral pathways; sanctions.
2. **Gender Mainstreaming** -- Gender analysis; gender-balanced hiring; gender-sensitive facility design; gender-inclusive stakeholder engagement.

3. **Protection of Vulnerable Groups** -- Children, elderly, persons with disabilities, informal settlers, riverine/island communities.
4. **Labour Influx Management** -- Local hiring; worker accommodation standards; community liaison; health services.

Table 1.8: LSHIP Alignment with AfDB OS5 GBV/SEA/SH Requirements

OS5 Requirement	LSHIP Compliance Action	Evidence
Code of Conduct	Mandatory for all workers, subcontractors, security personnel	Appendix 11; Chapter 9
GBV/SEA/SH Training	Induction training + monthly refreshers	Chapter 10, Section 9.4.2
Confidential Reporting	Hotline, suggestion boxes, female GRM focal points, anonymous options	Chapter 10, Section 9.5.2
Survivor-Centered Response	Confidentiality, safety, respect, no retaliation, informed consent	Chapter 9, Section 9.5.1
Referral Pathways	Medical (PEP within 72 hours), psychosocial, legal, shelter	Chapter 9, Section 9.6
Sanctions	Warning, suspension, termination, legal prosecution	Chapter 9, Section 9.7
Gender-Balanced Hiring	≥50% female clinical staff, ≥30% female administrative staff	Chapter 1, Table 1.9
Disability-Friendly Design	Ramps, wide doorways, accessible toilets, braille signage	Section 3.3.2

Table 1.9 outlines the key gender and inclusion indicators that will be monitored throughout the implementation of the LSHIP. These indicators support the project's commitment to gender equity, social inclusion, and the protection of vulnerable groups, providing measurable targets and a framework for ongoing monitoring and reporting.

Table 1.9 -- Gender and Inclusion Indicators

Indicator	Target	Monitoring
Female staff in new PHCs	≥50% clinical, ≥30% administrative	Quarterly
Disability-friendly features in all new/refurbished PHCs	100%	Pre-operation inspection

GBV/SEA/SH cases reported and responded	100% within 48 hours	Monthly
Women participating in consultations	≥40% of participants	Per consultation
Vulnerable PAPs receiving enhanced support	100%	RAP monitoring
Local hiring (within LGA)	≥50% of unskilled labour	Monthly contractor report

1.12 Environmental and Social Management and Institutional Leadership

1.12.1 Institutional Leadership and Communication Structure

The LSHIP operates within a clearly defined institutional framework that establishes reporting lines, decision-making authority, and communication channels for effective project implementation. The leadership structure is designed to ensure accountability, transparency, and timely resolution of environmental and social issues across all PHC sites.

A. Project Governance Structure

The Lagos State Ministry of Health provides sectoral oversight and policy leadership. The Primary Health Care Board manages the PHC network, which has been decentralised into six Health Districts to bring healthcare closer to the people. The Project Implementation Unit (PIU) coordinates project delivery, having successfully implemented multiple health infrastructure projects between 2021–2025, including the New Massey Street Children's Hospital, General Hospital Ojo, and Ketu-Ejirin Psychiatry Hospital. Table 1.10 shows the project governance structure comprising the levels of different entities.

Table 1.10 the project governance structure for Safeguards Instrument

Level	Entity	Role	Key Responsibilities
Financing Institution	African Development Bank (AfDB)	Oversight & Supervision	Approve safeguard instruments; Conduct supervision missions; Review monitoring reports; Enforce covenants
Regulatory Oversight (Federal)	Federal Ministry of Environment (FMEnv) & National Environmental Standards and	Regulatory Authority	**FMEnv:** Issue EIA Certificate; Review ESIA and ESMP; Conduct compliance

	Regulations Enforcement Agency (NESREA)		inspections; Enforce EIA Act **NESREA:** Enforce national environmental standards (air, water, noise, waste) Conduct regulatory compliance monitoring
Regulatory Oversight (State)	LASEPA, LAWMA, HEFAMAA	Regulatory Authority	State EIA concurrence; Issue environmental permits; Waste management oversight; Healthcare facility accreditation
Implementing Agency	Lagos State Ministry of Health (LSMoH)	Project Execution	Overall project management; Policy direction; Resource allocation
Project Management	Project Implementation Unit (PIU)	Day-to-Day Management	ESMP implementation oversight; Contractor management; Stakeholder engagement; GRM management; Reporting to AfDB and FMEnv
Execution	Contractors	Construction & Refurbishment	CESMP implementation; Environmental monitoring; Worker management; Community liaison; Incident reporting

Independent Oversight	Independent Environmental & Social Monitor (IESM)	Third-Party Monitoring	Quarterly audits; Compliance verification; Direct reporting to AfDB
Community Representation	Traditional Institutions, CDAs, Community Liaison Officers	Community Interface	Community entry facilitation; Stakeholder engagement; GRM (community-level); Cultural heritage protection

B. Reporting and Communication Lines

Figure 1.14 establishes the communication channels for environmental and social management across the LSHIP.

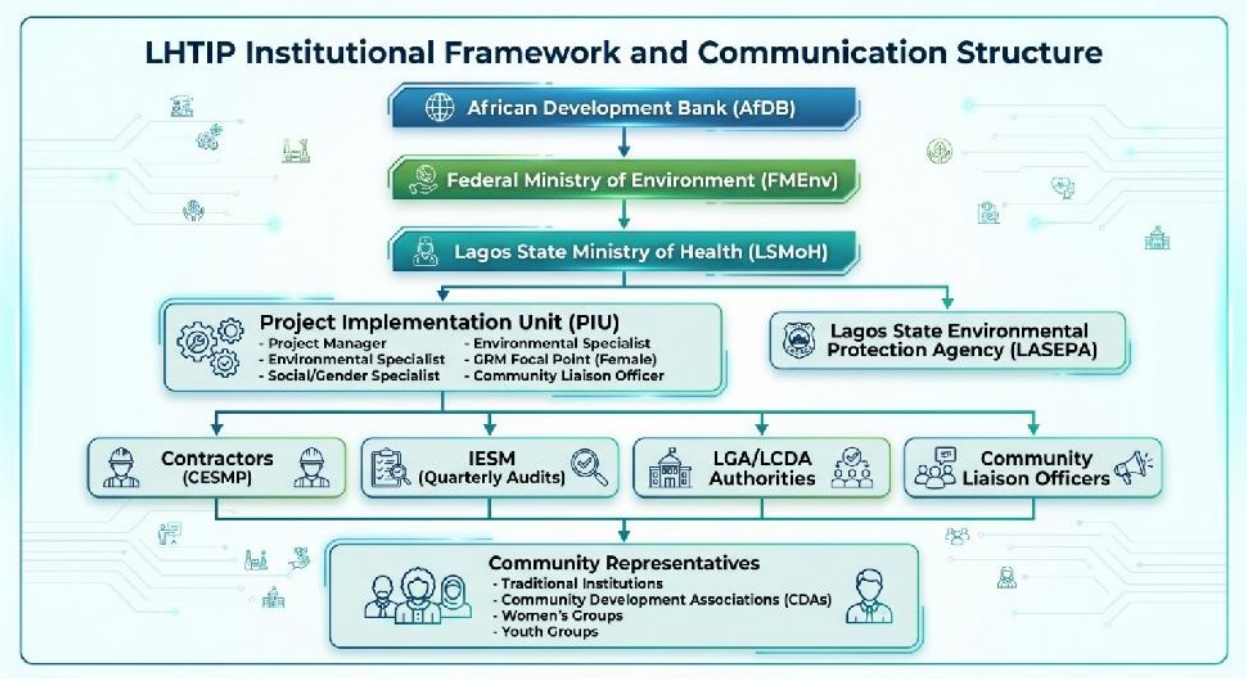


Figure 1.14: LSHIP Institutional Framework and Communication Structure

The institutional structure shown above is cross-referenced in Chapter 7 (ESMP) under institutional arrangements and in Chapter 9 (SEP) under communication and grievance redress mechanisms. It also supports AfDB OS10 by defining clear engagement and escalation pathways between the PIU, PMU, CLO, and community representatives.

Grievances from community members flow from the Community Representatives to the CLO, then to the Contractor, PMU, and PIU. Unresolved grievances escalate to LASEPA and FMEnv, and ultimately to AfDB's Independent Recourse Mechanism (IRM) if required. Detailed

grievance procedures and communication protocols are provided in Chapter 9 (Stakeholder Engagement Plan).

Table 1.11. Communication Channels for Environmental and Social Management

Communication Type	Channel	Frequency	Responsible
Grievance Redress	Toll-free hotline; Suggestion boxes at PHCs; Female GRM Focal Point; Community Liaison Officers; PIU Safeguards Team	Ongoing	PIU / Contractors
Community Engagement	Town hall meetings; Focus Group Discussions; Community Liaison Officers; Traditional institutions	Quarterly	PIU / CLOs
Project Reporting	Contractor → PIU: Weekly E&S reports; PIU → AfDB: Quarterly E&S reports; PIU → FMEnv: Annual ESMP reports; IESM → AfDB: Quarterly audit reports	As scheduled	Contractors / PIU / IESM
Incident Reporting	Contractor → PIU: Within 24 hours; PIU → AfDB: Within 48 hours (serious incidents)	As needed	Contractors / PIU
Permitting & Compliance	Contractor → LASEPA: As required; PIU → FMEnv: As required by EIA Certificate	As needed	Contractors / PIU

D. Community Liaison Structure

Table 1.12 The following community liaison structure is established for each PHC site:

Table 1.12: community liaison structure

Level	Position	Role
Site Level	Site Community Liaison Officer (Contractor)	Daily community interface; Advance notification of activities; Respond to community inquiries; Report grievances to PIU
Community Level	Traditional Leaders (Obas, Baales)	Community entry facilitation; Cultural guidance; Grievance resolution (Level 1)

Community Level	CDA Chairpersons	Community representation; Local hiring coordination; Feedback collection
LGA Level	LGA Environmental Health Officer	Local regulatory liaison; Community health monitoring; Permit coordination
PIU Level	PIU Community Liaison Officer	Overall community engagement coordination; GRM management; Stakeholder engagement reporting

1.12.2 Structure of the Report

The structure of this ESIA follows the prescribed requirements of the African Development Bank (AfDB) for Category 1 projects and the Federal Ministry of Environment (FMEnv) for Category I undertakings. Given the scale, sensitivity, and multi-site nature of the LSHIP, strict adherence to these frameworks is essential to ensure regulatory compliance, methodological rigour, and alignment with international best practice.

Chapter 1 has established the strategic foundation for the assessment by presenting the national context, project rationale, delivery arrangements, and safeguard triggers. It has also outlined the legal and policy framework, introduced the project's risk categorisation, described the statewide cluster and typology structure, and defined the institutional leadership and communication systems required for environmental and social management. Together, these elements set the stage for a comprehensive Category 1 ESIA.

The subsequent chapters build on this foundation by presenting baseline conditions, assessing potential impacts, proposing mitigation measures, and detailing the environmental and social management instruments required for implementation. The ESIA is organised into ten chapters and twenty-eight appendices, structured to fully meet the expectations of FMEnv, Lagos State regulators, and AfDB.

Report Structure

- **Chapter 1 -- Introduction** National context, project overview, legal and policy framework, risk categorisation, resettlement triggers, climate considerations, gender and vulnerability, institutional arrangements.
- **Chapter 2 -- Project Justification & Alternatives** Rationale for the project, need assessment, alternative analysis (site, technology, design, "no-project" option).
- **Chapter 3 -- Project & Process Description** Detailed description of all 29 PHC sites, design specifications, construction processes, operational systems, resource requirements.

- **Chapter 4 -- Baseline Environment** Physical, biological, socio-economic, cultural, and climate baseline conditions across the project footprint.
- **Chapter 5 -- Impact Assessment** Identification and evaluation of unmitigated environmental and social impacts for construction and operation phases.
- **Chapter 6 -- Mitigation Measures** Proposed measures to avoid, minimise, reduce, or compensate for identified impacts.
- **Chapter 7 -- Environmental & Social Management Plan (ESMP)** Roles, responsibilities, monitoring framework, performance indicators, capacity-building requirements, and budget.
- **Chapter 8 -- Hazardous & Medical Waste Management Plan (HMWMP)** Procedures for segregation, storage, treatment, transportation, and disposal of medical and hazardous waste.
- **Chapter 9 -- Stakeholder Engagement & GBV/SEA/SH Action Plan** Engagement strategy, grievance redress mechanism, gender-based violence prevention measures, and community interface protocols.
- **Chapter 10 -- Conclusion & Recommendations:** Summary of findings, safeguard commitments, and recommendations for implementation.

1.14 FMEnv Participation, ESIA Team Composition and Stakeholders Engagement

1.14.1 FMEnv Participation and Documentation

The Federal Ministry of Environment (FMEnv) formally participated in the ESIA process for the Project and issued two statutory notifications to the Lagos State Ministry of Health (LSMoH):

1. Participation in Data Gathering and Laboratory Analyses (Letter Ref: FMEnv/EA/EIA/9513/VOL1/26)

FMEnv notified the LSMoH of its intention to witness the field data-gathering and laboratory sampling exercises. FMEnv officials were present during the sampling activities, and a Field Attestation Register was produced and signed by FMEnv representatives, the project proponent, and the ESIA consultants. The signed register is included as Appendix 10.

2. Participation in the Scoping Workshop (Letter Ref: FMEnv/EA/EIA/9513/VOL1/27)

FMEnv confirmed its participation in the Scoping Workshop alongside other state-level stakeholders. The workshop was successfully conducted and established the scope, data requirements, and key environmental and social issues to be addressed in the ESIA. The proceedings are documented in the relevant section of this report.

The two FMEnv notification letters (Refs: VOL1/26 and VOL1/27) constitute the official FMEnv documentation for this project and are included in Appendix 1.3. No additional confirmation letter is required, as the signed Field Attestation Register already provides formal evidence of FMEnv' s statutory participation in the ESIA process.

FMEnv Participation and AfDB Operational Safeguards

FMEnv's statutory involvement directly supports compliance with the AfDB Integrated Safeguards System (ISS, 2023/2024) by strengthening:

- **OS1 -- Environmental and Social Assessment:** through validation of the accuracy, credibility, and completeness of baseline environmental and social data.
- **OS2 -- Labour and Working Conditions:** by ensuring that field sampling and laboratory activities adhere to national occupational health and safety requirements.
- **OS3 -- Resource Efficiency and Pollution Prevention:** via oversight of air, water, soil, and noise sampling that informs pollution prevention and environmental quality management.
- **OS5 -- Land Acquisition, Restrictions on Land Use and Involuntary Resettlement:** by confirming site conditions and community interactions relevant to land access and potential displacement risks.
- **OS10 -- Stakeholder Engagement and Information Disclosure:** by participating as a statutory stakeholder and reinforcing transparency, regulatory oversight, and proper documentation of engagement processes.

FMEnv Witnessing and Baseline Data Integrity

FMEnv's witnessing of the field data-gathering and laboratory sampling exercises ensures the integrity, reliability, and traceability of all baseline environmental and social data used in this ESIA. The signed Field Attestation Register Appendix 10 provides independent verification that sampling methods, equipment use, chain-of-custody procedures, and laboratory analyses complied with national regulatory standards. This independent validation is essential for producing quantified, site-specific impact assessments, a core requirement under AfDB OS1 and a key concern highlighted during the Bank's review.

1.14.2 Stakeholder Engagement

FMEnv's participation in the field data-gathering and scoping processes forms part of the Project's regulatory stakeholder engagement and aligns with AfDB OS10 requirements for free, fair, prior, and informed consultation. The witnessing exercise was conducted with the attendance of the following FMEnv and State officials:

1. Okwesa Francesca – FMEnv, Abuja

2. Oshimowo T. Bolaji – Ministry of Environment & Water Resources, Lagos State
3. Adenaike Olubunmi O. – FMEnv, Lagos Zonal Office
4. Oyawoye Anuoluwa – LSMOE/WR
5. Mr. Braimoh – PHCB
6. Shittaboy Tolulope – FMEnv, Lagos Zonal Office
7. Kehinde Biok T. – FMEnv, Lagos Zonal Office
8. Eberechukwu E.U – FMEnv, Lagos Zonal Office

Their presence ensured transparency, regulatory oversight, and proper documentation of engagement activities. This statutory participation is cross-referenced in the Stakeholder Engagement Plan (SEP), where broader community consultations, attendance records, and engagement outcomes are detailed. FMEnv's witnessing also provides assurance that stakeholder interactions were conducted in a manner consistent with OS10 principles of inclusiveness, fairness, and informed participation.

The Project aligns with the updated AfDB Integrated Safeguards System (ISS, 2023/2024), which comprises Operational Safeguards OS1--OS10. All references to the former OS1--OS5 framework have been updated accordingly throughout this ESIA. The Project triggers OS1 (Environmental and Social Assessment), OS2 (Labour and Working Conditions), OS3 (Resource Efficiency and Pollution Prevention), OS4 (Community Health, Safety and Security), OS5 (Land Acquisition and Involuntary Resettlement), OS6 (Biodiversity and Ecosystem Services), and OS10 (Stakeholder Engagement and Information Disclosure). Plate 1.1 shows a collage of pictures of the Regulators and some stakeholders met.



Stakeholders at the Meetings Held for the Ibeju Lekki Axis



Stakeholders with the FMENv Rep During the Stakeholders Meeting



The Federal Controller, FMENv, Lagos



Scoping Workshop with Stakeholders Before the Field Work at Ibeju Lekki



MDS ESIA Leads with FMENv Reps



Plate 1.1: Collage of Photographs Showing Engagement with Regulators and Stakeholders during the ESIA Exercises from 1-9 April, 2026

1.15 Public Disclosure and Accessibility

In accordance with AfDB's Policy on Disclosure and Access to Information (DAI Policy), which requires timely disclosure of project information to enable genuine public participation, the following accessibility measures will be implemented during the 120-day public disclosure period:

1.15.1 Accessibility for Illiterate Community Members

- **Audio Recordings:** Audio recordings of the Non-Technical Summary will be produced in English and Yoruba and made available at PHC waiting areas, community halls, and through community liaison officers.
- **Community Radio:** Key findings will be broadcast on local radio stations (including Ibeju-Lekki community stations) in Yoruba and English over three consecutive weeks, given the coastal and rural nature of the Ibeju-Lekki communities.
- **Public Readings:** Public readings of the Non-Technical Summary will be conducted at each PHC site and community hall, with facilitators available to answer questions.

1.15.2 Accessibility for Visually Impaired Persons

- **Large-Print Versions:** Large-print (18pt font) versions of the Non-Technical Summary will be available at all disclosure locations.
- **Audio Descriptions:** Audio recordings will include verbal descriptions of key figures and maps.
- **Assistance:** Community liaison officers will be available to assist visually impaired persons in reviewing the report.

1.15.3 Accessibility for Remote and Coastal Communities (Agbowa, Ejirin, Solu-Alade, Orimedu)

- **Local Disclosure Points:** In addition to LSMoH headquarters and Ibeju-Lekki LGA secretariat, hard copies of the ESIA and Non-Technical Summary will be available at:
    - Agbowa PHC waiting area
    - Ejirin PHC waiting area
    - Solu-Alade PHC waiting area
    - Orimedu PHC waiting area
    - Ibeju-Lekki LGA Secretariat
    - Community halls in each catchment
- **Boat Transport:** For coastal and riverine locations with limited road access, copies will be transported by boat to the community and made available at the PHC and fish-landing areas.

1.15.4 Feedback Mechanism during Disclosure

During the 120-day disclosure period, public comments on the draft ESIA will be collected through:

Channel	Description

GRM Hotline	Toll-free number for verbal comments
Suggestion Boxes	Located at each PHC, community hall, and market
Community Meetings	Dedicated feedback sessions at each site
Written Submissions	Email and physical address provided in ESIA

All comments will be logged, reviewed, and responded to within 14 days. A summary of comments received and project responses will be included in the final ESIA submitted to FMEnv and AfDB.

1.15.5 Language and Translation

The Non-Technical Summary will be provided in:

- English (official language)
- Yoruba (dominant local language)
- Pidgin English (widely spoken in coastal communities)

CHAPTER TWO – PROJECT JUSTIFICATION & ALTERNATIVES

2.1 Introduction

This chapter presents the justification for the Lagos State Health Infrastructure Project (LSHIP) and demonstrates why the project is necessary, what benefits it will deliver, and how it aligns with national, state, and international development priorities. The chapter also presents a systematic alternatives analysis, comparing the preferred option against reasonable alternatives including the no-project option, alternative sites, engineering designs, construction methods, and climate adaptation strategies.

The LSHIP will address healthcare infrastructure deficiencies across 29 PHC facilities serving an estimated catchment population of 2.5 million residents, with the no-project alternative resulting in continued annual productivity losses estimated at NGN 138.6 billion (US$92 million) due to preventable morbidity and mortality.

The alternatives analysis follows:

- FMEnv EIA Act CAP E12 LFN 2004 (Section 4 – consideration of alternatives)
- AfDB Operational Safeguard 1 (OS1) – alternatives analysis including no-action, technological, site, design, and operational alternatives
- Equator Principles IV – assessment of alternatives including environmental and social impacts
- **IFC Performance Standard 1** -- consideration of technically and financially feasible alternatives (International Finance Corporation, 2012)

Note on Report Structure

This ESIA report covers only Group 5 (Epe / Ibeju-Lekki Axis). Separate, standalone ESIA reports have been prepared for the remaining clusters. The justification and benefits presented in this chapter apply to the entire LSHIP programme, while the alternatives analysis focuses on site-specific considerations for the Epe / Ibeju-Lekki Axis facilities covered in this report.

2.2 Project Justification

2.2.1 Deficiencies of Existing Healthcare Infrastructure

Based on site assessments and structural evaluations conducted across all 29 PHC facilities in Lagos State, the deficiencies are categorised into three primary pillars. These findings highlight the gap between current conditions and the required standards for safe, efficient clinical operations.

First, structural and environmental deficiencies

The physical integrity of the buildings often compromises the safety of both patients and staff. Key issues identified across the clusters include:

Building envelope integrity: Widespread evidence of roof leaks and dampness leads to compromised ceiling boards and mould growth.

Surface finishes: Non-medical grade, porous floor tiles and wall paints that do not support rigorous disinfection protocols are observed across all site.

Accessibility: Lack of standard ramps, narrow doorways, and inadequate signage make facilities difficult to navigate for Persons with Disabilities (PWDs). This is a systemic issue across all 29 facilities.

Perimeter and security: Incomplete or dilapidated fencing at several sites leads to encroachment and security risks for night-shift staff, noted in Groups 5

Second, utilities and WASH (Water, Sanitation, and Hygiene)

The lack of consistent life safety utilities is a critical barrier to infection prevention and control (IPC) across all clusters.

Water supply: Dependence on untreated borehole water without functional filtration systems is universal across all 29 PHCs. Several sites report inadequate storage capacity or rusted overhead tanks.

Sanitation and waste: Poorly demarcated waste zones and non-functional incinerators that do not meet emission standards lead to open burning of medical waste, observed in Groups 3, 4, 5, and 7.

Power reliability: Heavy reliance on petrol and diesel generators due to unstable grid connection affects all 29 facilities. Lack of renewable energy backups frequently interrupts cold chain maintenance for vaccines.

Hygiene facilities: Inadequate ratio of functional toilets to patient volume is observed across all sites. Many staff and patient restrooms lack basic handwashing stations or elbow-action taps.

Third, clinical and space deficiencies

Spatial layouts often fail to support modern clinical workflows or patient privacy.

Zoning and flow: Poor separation between clean clinical areas and dirty service areas (laundry and waste) creates operational friction and physical crowding.

Patient privacy: Consultations often take place in cramped, shared spaces without adequate partitioning or soundproofing.

Specialised storage: Lack of dedicated, temperature-controlled pharmacies and secure stores for medical records is observed across all 29 facilities.

Capacity overload: Waiting areas are consistently undersized for catchment populations, leading to overcrowding in corridors and outdoor porches.

Table 2.1: Summary of Site-Specific Deficiencies by Cluster

Cluster	Key Infrastructure Deficiencies	Primary Clinical Impact
Group 1 (Western Mainland Hub)	High-density urban strain; outdated MEP; poor ventilation	Overcrowding; cross-infection risk
Group 2 (Central Business Hub)	Ageing infrastructure; inadequate disability access	Patient privacy compromised; exclusion of PWDs
Group 3 (Ikorodu North Corridor)	Waterlogged areas; erosion-prone sites; wetland adjacency	Flooding risk; service disruption
Group 4 (Ikorodu Coastal/Hinterland)	Coastal erosion risk; asbestos in older structures (suspected)	Equipment degradation; worker exposure risk
Group 5 (Epe/Lekki Eastern Axis)	Rural-urban transition strain; inadequate waste management	Needlestick injuries; environmental contamination
Group 6 (Ibeju-Lekki Coastal Hub)	Salt-air corrosion; waterfront access challenges	Accelerated equipment failure; access delays
Group 7 (Badagry West Axis)	Riverine and border-corridor constraints; asbestos confirmed; flood risk	High climate vulnerability; service discontinuity
Group 8 (Regional Outliers)	Remote hinterland locations; marshland terrain; poor road access	Travel barriers for patients; supply chain delays

Source: Multiple Development Services (2026)

Key synthesis of findings for Group 5

Safety and stability: While most structures remain standing, the four PHCs in Group 5 exhibit varying degrees of deterioration. Solu-Alade PHC requires asbestos assessment and potential abatement. Orimedu PHC, due to its coastal location, requires complete new construction on a climate-resilient design.

Clinical efficacy: The primary barrier to quality care across all four Group 5 sites is the lack of consistent utilities (power and water), which prevents effective use of modern diagnostic tools.

Environmental resilience: Facilities in coastal or low-lying areas face unique challenges from corrosion (Orimedu) and flooding (Ejirin, Agbowa), necessitating specialised, climate-resilient building materials in new construction and refurbishment.

2.2.2 Safety Issues

The safety profile of the project area encompasses current baseline hazards, risks introduced during construction and refurbishment, and long-term implications for surrounding populations across all four Group 5 sites.

First, facility-specific safety risks (current baseline)

Existing conditions at the PHCs present immediate hazards to current occupants.

Structural instability: Critical structural failure is not observed at Group 5 sites, but Ejirin PHC experiences deterioration from riverine conditions, and Solu-Alade PHC has deteriorating roofing systems suspected to contain asbestos.

Biohazards and air quality: Persistent dampness and roofing leaks have led to mould growth in some facilities, creating respiratory risks for patients.

Fire safety gaps: Most facilities lack functional fire detection systems, extinguishers, or clearly marked emergency assembly points.

Insecure perimeters: Lack of adequate fencing allows unauthorised access, posing physical security risks to medical staff during night shifts.

Second, occupational health and safety (OHS) during construction

The planned refurbishment and construction activities introduce high-risk variables for the workforce.

Physical and mechanical hazards: Risk of falls from heights during roof replacements (Ejirin, Solu-Alade) and injuries from heavy machinery operation in confined clinical compound spaces.

Hazardous materials: Potential exposure to asbestos at Solu-Alade PHC (suspected) requires specialised handling and PPE.

Bio-contamination: Risks associated with excavating areas near old soakaways or medical waste pits, which may contain sharp objects or pathogens.

Environmental stressors: High noise levels and dust inhalation during structural drilling, impacting both construction teams and any continuing healthcare services.

Third, community and public safety concerns

The project's footprint extends beyond site boundaries, affecting local residents across all four Group 5 communities.

Traffic and logistics: Increased movement of heavy-duty vehicles transporting construction materials through narrow community roads, particularly acute in Solu-Alade and Orimedu where access roads are unpaved and narrow.

Infectious disease transmission: Potential for spread of communicable diseases due to labour influx into small, rural, or semi-urban communities.

Waste and pollution: Improper disposal of construction debris or hazardous effluents could contaminate local water sources, especially in coastal areas sensitive to groundwater pollution at Orimedu and Ejirin.

Public access: Risk of community members, particularly children, wandering into unsecured construction zones without proper hoarding and danger signage.

Table 2.2: Mitigation Measures for Key Safety Issues

Safety Issue	Mitigation Measure
Construction accidents	Mandatory PPE (boots, helmets, high-vis) and designated Safety Officer on site
Electrical safety	Installation of earthing systems and circuit breakers in new solar-hybrid setups
Security gaps	Construction of reinforced perimeter walls and solar-powered site lighting
Waste hazards	Implementation of Medical Waste Management Plan with colour-coded bins and lined pits
Asbestos exposure (Solu-Alade)	Licensed abatement contractor; wet removal; air monitoring; medical surveillance
Labour influx risks	GBV Action Plan; Code of Conduct; community liaison; worker GRM

Source: Multiple Development Services (2026)

2.2.3 Congestion

The congestion factor across the 29 PHCs is a multifaceted challenge impacting clinical outcomes, operational efficiency, and community safety. Under the LSHIP, these bottlenecks are addressed through spatial redesign and infrastructural expansion.

First, clinical and patient congestion

Current facilities struggle with high patient-to-space ratios, leading to:

Waiting room overload: Patients often spill into corridors or outdoor porches due to undersized waiting areas, increasing airborne cross-infection risk (e.g., TB, respiratory viruses). This is

most severe in Groups 1, 2, and 3 but also observed in Agbowa PHC (Group 5) due to growing population pressure.

Consultation bottlenecks: Insufficient consulting rooms result in long wait times, often forcing triage to occur in public view, compromising patient confidentiality.

Maternal and child health (MCH) strain: Immunisation days see extreme crowding, overwhelming limited space for weighing, counselling, and vaccination.

Second, space and layout congestion

Internal architecture of baseline facilities is frequently inefficient.

Poor zoning: Inadequate separation between clean clinical areas and dirty service areas (laundry and waste) creates operational friction and physical crowding.

Storage deficiencies: Medical supplies and records are often stored in active clinical areas or hallways due to lack of dedicated, secure storage rooms.

Inadequate staff quarters: Where staff live on-site, quarters are cramped, leading to poor rest conditions and reduced emergency call-back efficiency.

Third, logistics and access congestion

External factors hinder smooth flow of people and supplies.

Narrow access roads: Many PHCs located in rural areas have narrow, unpaved tracks – most acute in Group 5 at Solu-Alade and Orimedu.

Site encroachment: Over time, local markets or informal settlements have encroached upon facility boundaries, restricting vehicle and emergency service movement.

Construction logistics: During the project phase, presence of construction materials, machinery, and workforce can temporarily worsen access for patients and ambulances.

Fourth, mitigation through the LSHIP project

The LSHIP framework introduces specific interventions to decongest these facilities.

Spatial expansion: Increasing total clinical footprint by adding consulting rooms and larger, well-ventilated waiting halls designed for high patient volumes.

Universal design and flow: Implementing standardised one-way patient flows to separate entry and exit points, reducing physical interaction between arriving and departing patients.

Dedicated utility zones: Moving heavy utilities (generators, waste management, water tanks) to perimeter areas, freeing central space for clinical activity.

Digital integration: Shifting toward electronic medical records (EMR) to eliminate bulky physical filing cabinets, reclaiming floor space for clinical use.

Logistics planning: Site-specific Traffic Management Plans (TMP) during construction to ensure ambulance bays remain clear and deliveries occur during off-peak hours.

2.3 Strategic Need

The LSHIP aligns with Lagos State's two-pronged health strategy: (1) ensuring all residents have access to quality healthcare without financial ruin, and (2) making Lagos State a premier destination for inbound medical tourism. The project supports the State's THEMES+ agenda and contributes to the achievement of Universal Health Coverage.

2.3.1 Lagos State Development Plan 2052 – Health Sector Goals

The Lagos State Development Plan 2052 sets ambitious health sector targets:

- Achieve Universal Health Coverage (UHC) by 2030
- Reduce maternal mortality from 150 to below 70 per 100,000 live births
- Reduce under-five mortality from 45 to below 25 per 1,000 live births
- Strengthen pandemic preparedness and response

The LSHIP directly contributes by expanding access to primary care (11 new PHCs including Agbowa and Orimedu in Group 5, each serving approximately 50,000 residents), improving quality (19 refurbished PHCs including Ejirin and Solu-Alade in Group 5), and strengthening referral systems across all eight clusters.

Table 2.3: Contribution to LSDP 2052 Health Sector Goals by Cluster (Group 5 highlighted)

Cluster	Primary Contribution
Group 1	High-density urban access; decongestion of existing facilities
Group 2	Administrative hub strengthening; referral pathway enhancement
Group 3	Peri-urban expansion; new service provision for growing population
Group 4	Coastal and industrial corridor access; climate-resilient infrastructure
Group 5	Rural-urban transition bridging; health equity for underserved areas
Group 6	High-growth coastal corridor support; modernised refurbishment
Group 7	Riverine and border-corridor security; climate-resilient healthcare
Group 8	Last-mile access for remote hinterland and marshland populations

Source: Multiple Development Services (2026)

2.3.2 AfDB High 5 Priorities

The LSHIP aligns with four of AfDB's five High 5 priorities:

1. Improve the Quality of Life for the People of Africa – improved healthcare access, job creation (6,537 direct jobs)
2. Light Up and Power Africa – solar PV systems at all 29 PHCs, including Agbowa and Orimedu in Group 5

3. Feed Africa – indirectly through improved health of farming communities (relevant to Group 5 where farming is a primary livelihood)
4. Industrialize Africa – healthier workforce, reduced absenteeism
5. Integrate Africa

2.3.3 Sustainable Development Goals (SDGs)

The LSHIP directly contributes to the following Sustainable Development Goals.

Table 2.4: Alignment with Sustainable Development Goals

SDG	Contribution
SDG 3 (Good Health and Well-being)	Improved healthcare access, maternal/child health, pandemic preparedness
SDG 5 (Gender Equality)	Gender-balanced hiring (≥50% female clinical staff); GBV prevention
SDG 8 (Decent Work and Economic Growth)	6,537 direct jobs; local procurement (60–70% of budget)
SDG 9 (Industry, Innovation and Infrastructure)	Climate-resilient healthcare infrastructure; solar PV
SDG 10 (Reduced Inequalities)	Universal access for PWDs; services to underserved communities (including Group 5)
SDG 11 (Sustainable Cities and Communities)	Resilient infrastructure in urban/peri-urban clusters
SDG 12 (Responsible Consumption and Production)	Waste management; circular economy (reuse/recycle construction waste)
SDG 13 (Climate Action)	Solar PV; climate-resilient design (oversized drainage, elevated electricals)
SDG 16 (Peace, Justice and Strong Institutions)	GRM; community engagement; transparency
SDG 17 (Partnerships for the Goals)	AfDB financing; multi-stakeholder implementation

Source: United Nations (2015); Multiple Development Services (2026)

2.4 Project Benefits

The LSHIP is projected to deliver significant socio-economic impacts as part of Lagos State's broader health system transformation strategy:

- Over 6,500 direct jobs to be created across all components
- 1 million additional patient visits to PHCs and General Hospitals annually

- 1,240 additional patient beds
- 2,500 new health workers trained annually (upon completion of the University of Medical and Health Sciences)
- 6.4 million lab tests and 480,000 imaging scans to be supported annually through the MDSPS
- Annual economic impact: N138.6 billion (US$92 million)

Collectively, these investments will improve the lives and livelihoods of millions of Lagos residents while making Lagos a premier destination for medical tourism.

2.4.1 Economic Benefits

The economic benefits of the project area are summarized in Table 2.5 below:

Table 2.5: Economic Benefits of the LSHIP Programme

Benefit	Quantification	Source
Direct jobs created	6,537 direct jobs across all components	Lagos State Ministry of Health (2025), p. 44
Indirect jobs	Estimated 10,000–15,000	Consultant estimate
Annual economic impact	NGN 138.6 billion (US$92 million)	Lagos State Ministry of Health (2025), p. 44
Local procurement	60–70% of construction budget	Multiple Development Services (2026)

Source: Lagos State Ministry of Health (2025); Multiple Development Services (2026)

2.4.2 Local Business and Supply Chain Opportunities (Epe/Ibeju-Lekki Axis)

The LSHIP presents significant opportunities for local businesses and supply chain development in the Epe/Ibeju-Lekki axis. These opportunities extend beyond direct employment and encompass structured local content targets, support mechanisms, and site-specific participation.

Table 2.6: Local Material Supply Opportunities

Material	Estimated Quantity	Local Sourcing Potential	Local Suppliers
Cement	[Insert tonnes]	High (Dangote, Lafarge)	Epe/Ibeju-Lekki-based distributors
Sand and Gravel	[Insert m^3]	High (licensed local borrow pits)	Epe/Ibeju-Lekki-based sand dealers

Concrete Blocks	[Insert number]	High (local block-making industries)	Epe/Ibeju-Lekki-based block manufacturers
Steel	[Insert tonnes]	Medium (Nigerian mills)	Nigerian steel distributors

Table 2.7: Business and Contractual Opportunities

Opportunity Type	Description	Target Beneficiaries	Monitoring Indicator
Direct Procurement	Contractors will procure materials from local suppliers where feasible	Local material suppliers, hardware stores, distributors	Volume of local procurement (₦ value)
Subcontracting	Local subcontractors engaged for specialized works (electrical, plumbing, roofing, etc.)	Epe/Ibeju-Lekki-based contractors and artisans	Number of local subcontractors engaged
Service Contracts	Catering, security, waste management, and other services	Local service providers	Number of local service providers contracted
Equipment Rental	Rental of construction equipment from local suppliers	Local equipment rental companies	Number of local equipment suppliers
Accommodation and Hospitality	Worker accommodation and hospitality services	Local guesthouses, hotels, and landlords	Revenue generated for local hospitality sector
Transport and Logistics	Local transport services for workers and materials	Local transport operators (OKADA, Keke, buses, trucks)	Revenue generated for local transport sector

Table 2.8: Local Content Targets (Epe/Ibeju-Lekki Axis)

Local Content Area	Target	Monitoring Method
Local Procurement (Materials)	≥ 50% of eligible construction materials sourced locally	Procurement records, supplier registration
Local Subcontracting	≥ 40% of eligible subcontracts awarded to local firms (within LGA)	Subcontract records

Local Hiring (Unskilled Labour)	≥ 50% of unskilled workers from LGAs where construction occurs	Hiring records (by LGA of residence)
Local Hiring (Skilled Labour)	≥ 30% of skilled workers from Lagos State	Hiring records
Local Services	≥ 60% of eligible service contracts awarded locally	Service contracts records
Women-Owned Businesses	≥20% of local procurement from women-owned businesses	Supplier registration, procurement records

Table 2.9: Local Business Support Measures

Measure	Description	Responsible
Supplier Registration	Establish a local supplier database for materials and services	Contractor / PIU
Business Awareness	Conduct community meetings to inform local businesses of procurement opportunities	PIU / Community Liaison Officer
Capacity Building	Provide basic business and tendering skills training for local businesses	PIU / Contractor
Preference for Local Suppliers	Apply preference for local suppliers where quality and price are competitive	Contractor
Transparent Procurement	Ensure transparent and competitive procurement processes accessible to local businesses	Contractor / PIU
Payment Terms	Ensure prompt payment to local suppliers and subcontractors (within 30 days)	Contractor
Grievance Mechanism	Provide a mechanism for local businesses to report procurement-related grievances	GRM

Table 2.10: Economic Multiplier Effect

Multiplier Effect	Impact
Direct Employment Income	Workers spend wages in local economy (housing, food, transport, goods)
Local Procurement	Suppliers' revenue circulates within the local economy
Service Contracts	Service providers' revenue stimulates local service sector
Tax Revenue	Increased business activity generates tax revenue for LGAs

Skills Development	Local workers gain construction and technical skills, increasing future employability
Infrastructure Improvement	Access roads and other improvements benefit local businesses

Table 2.11: Epe/Ibeju-Lekki Axis Site-Specific Local Business Opportunities

Site	Local Business Opportunities	Potential Local Suppliers
Agbowa PHC (New Construction)	- Material supply (cement, blocks, sand, gravel, steel) - Labour supply (local workers) - Catering and hospitality services - Equipment rental	- [Insert local market] suppliers - Epe/Ibeju-Lekki-based block manufacturers - Local transport operators - Guesthouses and restaurants
Orimedu PHC (New Construction)	- Material supply (building materials) - Labour supply (local artisans) - Agricultural community employment	- [Insert local market] suppliers - Local artisans - Local service providers
Ejirin PHC (Refurbishment)	- Material supply (roofing, plumbing, electrical) - Labour supply (local artisans)	- [Insert local market] suppliers

	- Waste management services - Security services	- Epe/Ibeju-Lekki-based hardware stores - Local waste management companies - Local security firms
Solu-Alade PHC (Refurbishment)	- Material supply (roofing, plumbing, electrical) - Labour supply (local artisans) - Waste management services - Security services	- [Insert local market] suppliers - Epe/Ibeju-Lekki-based hardware stores - Local waste management companies - Local security firms

2.4.2.1 Social Benefits

The LSHIP is designed to deliver far-reaching social dividends across all 29 project sites and eight clusters. Beyond physical structures, the initiative strengthens community social fabric and improves quality of life for residents.

First, enhanced health outcomes and life expectancy

Reduced maternal and infant mortality: Upgraded MCH wings provide safer delivery and neonatal care environments, directly addressing high-risk births in underserved areas, including Group 5 (Ejirin and Orimedu).

Infection control: By resolving WASH deficiencies and overcrowding, the project reduces hospital-acquired infection transmission and waterborne diseases.

Second, promotion of social equity and inclusion

Universal accessibility: Retrofitting facilities with ramps, grab rails, and wider corridors ensures PWDs and elderly can access healthcare independently and with dignity – required at all 29 facilities, including Agbowa, Ejirin, Solu-Alade, and Orimedu.

Gender-sensitive care: Improved spatial layouts provide private spaces for breastfeeding, counselling, and GBV screenings, making clinics safer for women.

Third, economic empowerment and local livelihoods

Job creation: Construction and rehabilitation phases prioritise local labour recruitment (artisans, masons, security), providing immediate household income near project sites.

Skill transfer: Local workers gain experience in modern green construction standards and OHS protocols, increasing future employability.

Micro-enterprise support: Increased activity around PHCs often boosts patronage of nearby small businesses and vendors.

Fourth, community resilience and psychological well-being

Improved patient experience: Transitioning from dilapidated, cramped environments to clean, well-lit, ventilated spaces reduces patient anxiety and improves healthcare worker morale.

Community pride: A modern, functional PHC serves as a landmark of government presence, fostering belonging and collective ownership.

Climate resilience: Solar power and sustainable water systems keep PHCs functional during grid failures or extreme weather, serving as resilience hubs – particularly critical for Group 5 (coastal and flood-prone areas).

Fifth, strengthening health governance framework

Capacity building: Through train-the-trainer models and updated operational manuals, facility managers and local health committees are better equipped to maintain assets.

Accountability: GRM implementation gives community members a formal voice, ensuring healthcare delivery remains transparent and responsive to local needs.

The social benefits of the project are presented in Table 2.12 below:

Table 2.12: Social Benefits Matrix

Benefit	Quantification (Projected/Target)	Source
Maternal and Child Health Improvement	30–40% increase in facility-based deliveries; 25% reduction in neonatal referral delays	LSHIP Inception Report & NHMIS Data
Job Creation (Local Labour)	Minimum 40% of unskilled/semi-skilled labour from host communities	LSHIP Labour Management Procedure

Disability Inclusion (PWD)	100% compliance with Universal Design standards (ramps, wide doors, PWD toilets) across all 29 sites	Lagos State Office for Disability Affairs (LASODA)
Health Literacy and Awareness	Reach of 5,000+ residents per PHC catchment area	Community Engagement & Stakeholder Plan
Youth Empowerment and Skills	150+ local artisans trained in sustainable construction and OHS protocols	MDSL Capacity Building Framework
Improved IPC Compliance	50% reduction in healthcare-associated infection risks	ESIA Baseline & IPC Standards
Operational Reliability	24/7 power availability for vaccine cold chains via solar hybrid systems at 100% of sites (Energy)	Project Technical Specifications
Grievance Resolution	95% resolution rate for community concerns within 14 business days	LSHIP Grievance Redress Mechanism
Economic Stimulus	Estimated 15–20% boost in patronage for local micro-vendors near PHC sites	Socio-Economic Impact Assessment

Source: Multiple Development Services (2026)

Table 2.13: Social Benefits

Benefit	Quantification	Source
Population served by new PHCs (Orimedu, Agbowa)	2 new PHCs ×50,000 = 100,000 residents	Lagos State Ministry of Health, 2025
Population served by refurbished PHCs (Solu-Alade, Ejirin)	2 refurbished PHCs ×20,000-50,000 = 40,000-100,000 residents	Lagos State Ministry of Health, 2025
24/7 service availability	New PHCs operate 24/7	Lagos State Ministry of Health, 2025
Maternal mortality reduction (estimated)	20-30% in catchment areas	Consultant estimate
Under-five mortality reduction (estimated)	25-35%	Consultant estimate

2.4.3 Environmental Benefits

The LSHIP integrates environmental sustainability as a core infrastructure pillar, delivering significant ecological benefits that align with Nigeria's Climate Change Act 2021 and international green building standards.

First, climate change mitigation and carbon reduction

Decarbonisation of power: Replacing or augmenting fossil-fuel generators with solar PV hybrid systems across all 29 sites significantly lowers GHG emissions (estimated 2,000–4,000 tCO2e/year reduction).

Energy efficiency: LED lighting, energy-efficient medical equipment, and passive cooling architectural designs reduce overall facility energy demand.

Second, sustainable water and resource management

Groundwater protection: Installation of modern, lined soakaways and bio-digesters prevents untreated effluent leaching into the high water table, protecting local aquifers.

Water conservation: Low-flow taps and rainwater harvesting systems for non-clinical uses (floor cleaning, landscaping) reduce strain on local boreholes.

Third, integrated medical waste management

Modernisation of disposal: Replacing open-pit burning with eco-friendly, high-temperature incinerators or autoclaves meeting strict emission standards.

Waste segregation: Standardised colour-coded waste streams (Infectious, Sharps, General) ensure hazardous waste neutralisation before leaving the site, preventing soil and water contamination.

Fourth, coastal and ecosystem resilience

Given the geographical sensitivity of Group 5 (coastal, lagoon, and wetland environments), the project incorporates nature-based safeguards.

Flood attenuation: Permeable paving and improved drainage networks reduce surface runoff and prevent seasonal flooding in low-lying healthcare compounds at Agbowa and Ejirin.

Anti-corrosive design: Green materials resistant to salt-air corrosion in coastal clusters (Orimedu) reduce maintenance frequency and waste from frequent structural repairs.

Fifth, indoor environmental quality (IEQ)

Natural ventilation: Redesigned window placements and ceiling heights maximise cross-ventilation, reducing mechanical cooling reliance and lowering airborne pathogen accumulation risk.

Non-toxic materials: Low-VOC paints and medical-grade, non-porous surfaces eliminate off-gassing and ensure sterile environments.

The Environmental benefits of the project are presented in Table 2.14 below:

Table 2.14: Environmental Benefits Matrix

Environmental Impact	Key Intervention	Long-term Benefit
Air Quality	Solar adoption; transition from petrol generators	Reduction in local air pollutants (NOx, SOx) and noise pollution
Water Security	Treated boreholes; rainwater harvesting	Reduced depletion of local groundwater reserves
Land Integrity	Secured medical waste zones; lined septic systems	Prevention of soil contamination and sharp waste accidents
Resource Efficiency	Circular economy approach to construction waste	Diverting debris from landfills through recycling and reuse

Source: Multiple Development Services (2026)

Under-five mortality reduction (estimated)	25-35%	Consultant estimate

Table 2.15: Environmental Benefits (LSHIP Programme)

Benefit	Quantification	Source
Solar PV capacity	1.55-3.1MW total across all facilities	Consultant estimate
GHG emissions reduction	2,000-4,000 tCO_2e /year	Consultant estimate
Diesel savings	500,000-1,000,000 litres /year	Consultant estimate
Water conservation	Rainwater harvesting 5,000-10,000L storage per PHC)	Consultant estimate

2.5 Alternatives Analysis

2.5.1 No-Project Alternative

The "No Project" alternative evaluates the consequences of not implementing the Lagos State Health Infrastructure Project (LSHIP) in the Ibeju-Lekki Axis. Under this scenario, the existing Primary Health Centres (PHCs) would continue operating with their current structural deficiencies, limited capacity, and inadequate service delivery infrastructure.

Failure to implement the project would result in:

- Continued deterioration of public health outcomes, especially maternal and child health indicators.
- Persistent overcrowding at secondary and tertiary health facilities due to weak PHC capacity.
- Reduced access to essential services for vulnerable groups, including women, children, the elderly, and low-income households.
- Inability to meet Lagos State's Universal Health Coverage (UHC) targets and SDG 3 (Good Health and Well-Being).
- Increased disease burden due to poor facility hygiene, inadequate waste management, and limited diagnostic capacity.
- Continued infrastructure decay, leading to higher long-term rehabilitation costs.
- Loss of economic opportunities for local contractors, artisans, suppliers, and labourers.

Given these consequences, the "No Project" alternative is not desirable and does not support Lagos State's health sector development objectives or AfDB's strategic priorities for improving human capital and social infrastructure.

Impacts (No-Project)

Description: The LSHIP is not implemented. Lagos State continues with existing healthcare infrastructure.

Environmental impacts (no-project):

Continued improper medical waste management across all 29 PHCs, including the four Group 5 facilities. Continued reliance on diesel generators (air pollution, GHG emissions). No climate-resilient infrastructure – existing facilities remain vulnerable to flooding, erosion, and heatwaves (particularly relevant for Group 5 coastal and flood-prone sites at Ejirin and Orimedu).

Social impacts (no-project):

Continued lack of access to primary care for residents in underserved clusters, including Group 5 (Agbowa, Ejirin, Solu-Alade, Orimedu). Continued maternal and child mortality (no improvement). Continued out-of-pocket expenditure (>75%). No RAPs for displaced persons (not relevant for Group 5). Continued asbestos exposure risk (suspected at Solu-Alade PHC).

Economic impacts (no-project):

No direct job creation (6,537 jobs foregone). Continued productivity losses from morbidity. No local economic stimulus from construction procurement.

Conclusion: The no-project alternative is unacceptable. It perpetuates health inequities, fails to address infrastructure deficits, and ignores environmental and social risks across all eight clusters, including Group 5.

2.5.2 Site Selection Alternatives

The analysis of site selection alternatives confirms that the in-situ rehabilitation model was selected over greenfield development or site relocation across all clusters. This strategic choice minimises social displacement while maximising existing community access.

The site selection alternatives are summarized in Table 2.16 below.

Table 2.16: Site Selection Alternatives for Group 5

Cluster	Original/Preferred Site	Alternative Considered	Reason for Rejection
Group 5 (Agbowa)	Existing wetland-adjacent site	Higher ground relocation	Only available government land; wetland buffers to be established
Group 5 (Orimedu)	Existing coastal site	Inland relocation	Loss of fishing community access; longer travel for pregnant women and elderly

Source: Multiple Development Services (2026)

Selection logic summary

Community trust: Original sites have deep-rooted social habit – residents are more likely to seek care at known locations.

Ease of implementation: Rehabilitating existing government-owned land avoids complex RAP and land titling processes (relevant for Group 5 where zero PAPs are identified).

Environmental stewardship: Brownfield development (existing sites) over greenfield (new land) minimises soil sealing and habitat destruction.

Resilience strategy: For flood-prone sites, original footprints (with upgraded defences) are preferred over relocation to unproven locations.

The technical selection criteria for site selection is summarized in Table 2.17 below.

Table 2.17: Technical Selection Criteria for Site Selection

Criterion	Rationale	Project Benefit

Land Ownership	Government-owned/gazetted land preferred	Zero legal disputes; accelerated commencement
Connectivity	Central ward location; road access	Reduced time-to-care for emergencies
Environmental Safeguards	Higher ground or drainable terrain	Long-term asset protection from climate change
Cost-Effectiveness	Utilisation of existing footprints	Maximised budget allocation for clinical equipment

Source: Multiple Development Services (2026)

Conclusion: The preferred sites across all eight clusters, including Agbowa, Ejirin, Solu-Alade, and Orimedu in Group 5, are optimal based on proximity to target populations, land availability (government-owned or voluntarily donated), accessibility, and cost.

2.5.3 Engineering Alternatives (Building Design)

The Engineering alternatives are presented in Table 2.18 below.

Table 2.18: Engineering Alternatives for Building Design

Alternative	**Description**	**Advantages**	**Disadvantages**	**Selected?**
Conventional design	Standard concrete block, grid electricity, diesel backup, conventional HVAC	Lower upfront cost (estimated 20% less)	Higher operating costs; higher GHG emissions; no climate resilience	No
Green building design (preferred)	Solar PV, natural ventilation, cool roofs, rainwater harvesting, energy-efficient lighting,	Lower operating costs (40–60% reduction in energy costs); lower GHG emissions;	Higher upfront cost (estimated 20% premium)	**Yes**

Alternative	Description	Advantages	Disadvantages	Selected?
	disability-friendly design	climate-resilient; aligns with SDGs and NDCs		

Source: Multiple Development Services (2026)

Justification for green building design: Long-term cost savings, climate resilience, environmental benefits, social benefits (improved patient/staff comfort, disability access), and alignment with AfDB, IFC, and Lagos State green building policies.

2.5.4 Energy Supply Alternatives

The Energy supply alternatives is presented in Table 2.19 below.

Table 2.19: Energy Supply Alternatives

Alternative	Description	Advantages	Disadvantages	Selected?
Grid only	Rely solely on national grid	No upfront cost	Grid unreliable; no power during outages; no climate resilience	No
Diesel generator only	Diesel generators as primary power	Reliable (if fuel available)	High operating cost; air pollution; noise; GHG emissions	No
Grid + generator	Grid primary, generator backup	Moderate upfront cost	Still relies on grid (unreliable) and generator (pollution, cost)	No

Alternative	Description	Advantages	Disadvantages	Selected?
Solar PV + battery + grid (preferred)	Solar primary, battery storage, grid backup	Low operating cost; zero emissions (during solar operation); silent; climate-resilient; 24–48 hour battery backup	Higher upfront cost (but declining)	**Yes**

Source: Multiple Development Services (2026)

2.5.5 Water Supply Alternatives

The water supply alternative is summarized in Table 2.20 below.

Table 2.20: Water Supply Alternatives

Alternative	Description	Advantages	Disadvantages	Selected?
Borehole only	Single borehole	Low upfront cost	Risk of depletion; no backup; no water quality treatment	No
Borehole + treatment	Borehole with UV filtration	Improved water quality	Still single point of failure; no backup during borehole failure	No
Borehole + rainwater harvesting + treatment (preferred)	Borehole primary, rainwater backup, UV filtration	Water security (rainwater backup); reduced groundwater abstraction;	Higher upfront cost (rainwater storage tanks)	**Yes**

Alternative	Description	Advantages	Disadvantages	Selected?
		improved quality		

Source: Multiple Development Services (2026)

2.5.6 Wastewater Treatment Alternatives

The waste water treatment alternatives are presented in Table 2.21 below.

Table 2.21: Wastewater Treatment Alternatives

Alternative	Description	Advantages	Disadvantages	Selected?
Septic tank + soakaway (PHCs)	Standard for low-flow facilities	Low cost; low maintenance	Not suitable for high volumes; risk of groundwater contamination if poorly maintained	**Yes**
No treatment (discharge to drain)	Direct discharge to storm drain	Zero cost	Illegal (violates NESREA); environmental contamination; public health risk	No

Source: Multiple Development Services (2026)

2.5.7 Construction Alternatives

The construction alternatives are presented in Table 2.22 below.

Table 2.22: Construction Alternatives

Alternative	Description	Advantages	Disadvantages	Selected?
Traditional construction	Conventional materials and methods (cement, steel, block)	Familiar; locally available; lower cost	Higher embodied carbon; slower construction	Yes (with low-carbon measures)

Alternative	Description	Advantages	Disadvantages	Selected?
Low-carbon construction	Low-carbon cement, recycled steel, local materials, reduced waste	Lower embodied carbon (20–30% reduction)	Slightly higher cost; requires sourcing	Yes (where feasible)

Source: Multiple Development Services (2026)

2.5.8 Climate Alternatives

The climate alternatives are presented in Table 2.23 below.

Table 2.23 Climate Adaptation Alternatives

Alternative	Description	Advantages	Disadvantages	Selected?
Standard design (no climate adaptation)	Design for current climate (1:50-year storm, no sea-level rise, no heatwave planning)	Lower upfront cost	Vulnerable to climate hazards; shorter facility lifespan; higher future adaptation cost	No
Climate-resilient design (preferred)	Design for future climate (1:100-year storm + 30% factor, elevated electricals, cool roofs, solar PV)	Resilient to climate hazards; longer lifespan; lower future adaptation cost; aligns with NDCs	Higher upfront cost (estimated 10–15% premium)	**Yes**

Source: Multiple Development Services (2026)

Justification for climate-resilient design: Lagos is highly vulnerable to climate hazards (flooding, heatwaves, sea-level rise). Facilities designed for 50+ year lifespan will face significantly different climate conditions by 2050–2070 (Intergovernmental Panel on Climate Change, 2021). This is particularly critical for Group 5 due to coastal exposure at Orimedu and flood-prone wetlands at Agbowa and Ejirin.

2.5.9 Waste Management Alternatives

The waste management alternatives are presented in Table 2.24 below.

Table 2.24: Waste Management Alternatives

Alternative	Description	Advantages	Disadvantages	Selected?
Open burning	Burn waste on site	Zero cost	Air pollution (dioxins, furans, PM); community health risk; illegal under NESREA	No (prohibited)
Unsegregated disposal to landfill	Mixed waste (including infectious) sent to landfill	Simple	Environmental contamination; public health risk; violates healthcare waste standards	No
WHO-compliant HMWMP (preferred)	Segregation (colour-coded), safe storage, treatment (autoclave), LAWMA disposal	Protects workers, communities, environment; complies with WHO,	Requires training, equipment, ongoing cost	**Yes**

Alternative	Description	Advantages	Disadvantages	Selected?
		AfDB, NESREA		

Source: Multiple Development Services (2026)

Justification for WHO-compliant HMWMP: Mandatory under AfDB OS4, IFC PS3, and NESREA regulations (World Health Organization, 2014). Essential for all 29 operational PHCs, including Agbowa, Ejirin, Solu-Alade, and Orimedu.

2.6 Climate Alignment

2.6.1 Nigeria's NDC Alignment

Nigeria's updated NDC (2021) commits to:

Adaptation: Climate-resilient infrastructure, flood management, heatwave preparedness

Mitigation: 20% unconditional (47% conditional) GHG reduction by 2030

The LSHIP aligns through:

- Oversized drains (+30% climate factor)
- Elevated electrical panels and equipment
- Solar PV (2,000–4,000 tCO2e/year reduction)
- Energy-efficient design
- Cool roofs and natural ventilation

Table 2.25: Climate Resilience Features for Group 5

Site	Primary Climate Hazards	Key Resilience Features
Agbowa PHC	Flooding (wetlands)	Oversized drainage systems; raised foundation levels; erosion control measures; cool roofing materials; natural ventilation design
Ejirin PHC	Flooding (riverine)	Elevated floor slab; flood barriers; oversized drainage; rainwater harvesting; corrosion-resistant materials; elevated electrical installations
Solu-Alade PHC	Seasonal flooding	Improved site grading; drainage channels; rainwater harvesting; cool roof systems; natural ventilation
Orimedu PHC	Coastal flooding; coastal erosion	Elevated foundation; coastal protection measures (sand stabilisation, vegetation buffers); corrosion-resistant materials; elevated electrical systems; rainwater harvesting

Source: Multiple Development Services (2026)

2.6.2 TCFD Alignment

The LSHIP follows TCFD recommendations (Task Force on Climate-related Financial Disclosures, 2017).

Table 2.26: TCFD Alignment of the LSHIP

TCFD Pillar	LSHIP Action
Governance	PIU responsible for climate risk management; ESMP includes climate monitoring
Strategy	Climate-resilient design protects assets and operations across all clusters
Risk Management	Climate hazard mapping; risk assessment (current and 2050 projections); adaptation measures
Metrics and Targets	GHG inventory; emissions reduction target (net-zero operational carbon)

Source: Task Force on Climate-related Financial Disclosures (2017); Multiple Development Services (2026)

2.7 Gender and Inclusion Alignment

The LSHIP mainstreams gender across all components (Lagos State Ministry of Women Affairs and Poverty Alleviation, 2023):

Facility design: Separate maternal and child health spaces; female staff facilities; disability-friendly access – across all 29 PHCs, including Agbowa, Ejirin, Solu-Alade, and Orimedu.

GBV prevention and response: GBV Action Plan (Chapter 9 of this ESIA); Code of Conduct; confidential reporting; referral pathways.

Employment: Gender-balanced hiring (≥50% female clinical staff, ≥30% female administrative staff).

Stakeholder engagement: Gender-segregated FGDs; female GRM focal points; women's groups consulted.

Livelihood restoration (RAPs): Not applicable for Group 5 (zero PAPs identified).

Table 2.27: GBV Risk for Group 5

Site	GBV Risk Level (Unmitigated)	Key Risk Factors
Agbowa PHC	Medium	Labour influx; economic vulnerability

Ejirin PHC	Medium-High	Labour influx; fishing community; poor lighting; isolated paths
Solu-Alade PHC	Medium-High	Rural isolation; poor lighting; isolated paths
Orimedu PHC	Medium-High	Coastal isolation; fishing community; poor lighting; isolated paths

Source: Multiple Development Services (2026)

2.8 Local Content and Economic Development Plan

LSHIP is committed to maximising local economic benefits through a comprehensive Local Content and Economic Development Plan. This plan aims to:

- Maximise local procurement of goods and services
- Create sustainable employment for local communities
- Build local capacity through skills transfer and training
- Support local businesses through inclusive procurement processes
- Ensure equitable benefits for women and vulnerable groups

2.8.1 Local Content Framework

Table 2.28: Local Content Framework -- Epe/Ibeju-Lekki Axis (Group 5)

Component	Target	Implementation Strategy	Monitoring
Local Procurement	≥ 50% of eligible materials and services	- Supplier registration database - Preference for local suppliers - Transparent procurement	Procurement records; supplier registration
Local Hiring	≥50% unskilled; ≥30% skilled	- Local job advertisements - Community notification - Hiring from within LGA	Hiring records (by LGA of residence)
Local Subcontracting	≥ 40% of eligible subcontracts	- Local contractor registration	Subcontract records

		- Capacity building - Tiered subcontracting	
Women-Owned Businesses	≥20% of local procurement	- Women entrepreneur support - Gender-responsive procurement - Business training	Procurement records by gender
Skills Transfer	≥ 200,000 local workers trained	- Apprenticeship programs - On-the-job training - Vocational training partnerships	Training completion records
Community Investment	≥1% of construction budget	- Community development projects - Infrastructure improvements - Health outreach	Community investment records

Table 2.29: Implementation Arrangements -- Epe/Ibeju-Lekki Axis (Group 5)

Activity	Responsible	Timeline
Local supplier registration	Contractor / PIU	Pre-construction (Month 1--2)
Local business awareness campaigns	PIU / Community Liaison Officer	Pre-construction (Month 1--2)
Local hiring plan	Contractor	Pre-construction (Month 1)
Skills training program	Contractor / PIU	Throughout construction
Procurement preference implementation	Contractor	Throughout construction
Monitoring and reporting	Contractor / PIU	Monthly

Table 2.30: Monitoring Indicators -- Epe/Ibeju-Lekki Axis (Group 5)

Indicator	Target	Frequency	Responsible

Value of local procurement (₦)	≥50% of eligible procurement	Monthly	Contractor
Number of local suppliers engaged	≥60% per site	Monthly	Contractor
Number of local workers hired	≥50% unskilled; ≥30% skilled	Monthly	Contractor
Number of women-owned businesses engaged	≥ 20% of procurement	Monthly	Contractor
Number of workers trained	≥200,000 across LSHIP programme	Quarterly	Contractor / PIU
Community satisfaction with local content	≥80% satisfied	Quarterly	PIU / IESM

2.9 Circularity And Resource Efficiency

2.9.1 Material Reuse and Recycling

The material reuse and recycling is presented in Table 2.31 below.

Table 2.31: Material Reuse and Recycling Potential

Material	Source	Reuse/Recycling Potential	Social Benefit
Construction waste (concrete, blocks, steel)	Demolition of existing structures	Crushed concrete and blocks reused as fill; steel recycled	Reduced disposal cost; local recycling jobs
Asbestos	Omolaiye (suspected)	No reuse -- hazardous waste; disposed at licensed landfill	Public health protection
Excavated soil	Earthworks (foundations, drainage)	Reused as fill on site; excess for landscaping	Reduced need for off-site disposal; local use
Wood waste	Formwork, pallets	Reuse for formwork; chipped for mulch; donated to community	Community benefits (wood for fuel, construction)

Material	Source	Reuse/Recycling Potential	Social Benefit
Metal scrap	Reinforcement steel, pipes	Recycled through local scrap dealers	Supports local scrap recycling industry
Packaging waste	Material deliveries	Reduced through just-in-time delivery; recycling where feasible	Waste management jobs; reduced landfill

Source: Multiple Development Services (2026)

2.9.2 Resource Efficiency

The resource efficiency measures are presented in Table 2.32 below.

Table 2.32: Resource Efficiency Measures and Savings

Resource	Efficiency Measure	Estimated Savings	Social Benefit
Energy	Solar PV; LED lighting; natural ventilation	40--60% reduction in grid/diesel consumption	Lower energy costs for PHC operations; reliable power for community health services
Water	Rainwater harvesting (5,000--10,000 L storage); water-efficient fixtures	20--30% reduction in borehole abstraction	Reduced groundwater stress; water security during droughts
Materials	Local sourcing; reduced waste; low-carbon cement	20--30% reduction in embodied carbon	Local economic benefits; lower environmental impact

Source: Multiple Development Services (2026)

2.10 Project Alternative

2.10.1 No Project Alternative

The “No Project” alternative evaluates the consequences of not implementing the Lagos State Health Infrastructure Project (LSHIP) in the Ibeju-Lekki Axis Group 5, specifically the Agbowa, Ejirin, Solu-Alade, and Orimedu PHCs. Under this scenario, the existing Primary Health Centres would continue operating with their current structural deficiencies, limited capacity, and inadequate service delivery infrastructure.

Failure to implement the project would result in:

- Continued deterioration of public health outcomes, especially maternal and child health indicators.
- Persistent overcrowding at secondary and tertiary health facilities due to weak PHC capacity.
- Reduced access to essential services for vulnerable groups, including women, children, the elderly, and low-income households.
- Inability to meet Lagos State’s Universal Health Coverage (UHC) targets and SDG 3 (Good Health and Well-Being).
- Increased disease burden due to poor facility hygiene, inadequate waste management, and limited diagnostic capacity.
- Continued infrastructure decay, leading to higher long-term rehabilitation costs.
- Loss of economic opportunities for local contractors, artisans, suppliers, and labourers.

Given these consequences, the “No Project” alternative is not desirable and does not support Lagos State’s health sector development objectives or AfDB’s strategic priorities for improving human capital and social infrastructure.

2.10.2 Site-Specific Alternatives for Each PHC

In accordance with AfDB ISS (2023/2024), alternatives were evaluated for each PHC in the Ibeju-Lekki Axis Group 5 to ensure that design, location, layout, and construction approaches minimise environmental and social impacts.

PHC 1: Agbowa Primary Health Centre

- **Alternative Location:** Relocation to an adjacent parcel was considered; rejected due to land ownership constraints and the likelihood of increased resettlement risk.
- **Alternative Design:** A larger multi-storey structure was considered; rejected due to site constraints and anticipated structural and cost implications.
- **Alternative Layout:** New structure to improve patient flow and reduce congestion; selected.

- **Alternative Construction Approach:** Prefabricated construction elements were considered; rejected due to supply chain limitations and site logistics.

PHC 2: Ejirin Primary Health Centre

- **Alternative Location:** Siting behind the existing structure was evaluated; rejected due to drainage limitations and flood vulnerability.
- **Alternative Design:** Modular expansion was considered; selected for reduced construction time and lower disruption to ongoing service delivery.
- **Alternative Access Route:** A rear access route was evaluated; rejected due to community safety concerns and land use constraints.

PHC 3: Solu-Alade Primary Health Centre

- **Alternative Location:** Relocation to a nearby government-owned parcel was considered; rejected due to distance from the target catchment population and reduced accessibility.
- **Alternative Layout:** Expansion of the waiting area, consultation rooms, and service circulation space was selected to improve functionality and patient comfort.
- **Alternative Waste Handling:** On-site temporary storage with controlled off-site disposal was preferred over uncontrolled disposal; selected to ensure compliance with healthcare waste management requirements.

PHC 4: Orimedu Primary Health Centre

- **Alternative Location:** Relocation to an alternative coastal strip was considered; rejected to maintain optimal proximity to the existing community population and avoid coastal ecosystem disruption.
- **Alternative Design:** Elevated coastal foundation design was evaluated and selected to mitigate high vulnerability to coastal flooding and sea-level rise.
- **Alternative Layout:** Optimised layout for the new construction footprint to ensure efficient medical workflow while safeguarding the surrounding environment; selected.

The alternatives analysis presented above satisfies AfDB ISS requirements by demonstrating that feasible options were evaluated at both the project level and the site level. The selected alternatives minimise environmental and social impacts while enhancing service delivery efficiency, community accessibility, and long-term sustainability.

2.11 Conclusion

The alternatives analysis presented above satisfies AfDB ISS requirements by demonstrating that feasible options were evaluated at both the project level and the site level. The selected

alternatives minimise environmental and social impacts while enhancing service delivery efficiency, community accessibility, and long-term sustainability.

The Lagos State Health Infrastructure Project (LSHIP) is fully justified by the severe deficiencies in Lagos State's healthcare infrastructure, the substantial economic, social, and environmental benefits it will deliver, and its alignment with national, state, and international development priorities.

The alternatives analysis demonstrates that:

- The no-project alternative is unacceptable, as it would perpetuate poor health outcomes, infrastructure decay, and limited access to essential services for vulnerable populations.
- Alternative options were considered for all facilities, but the preferred sites are optimal based on proximity to target populations, land availability, accessibility, and cost.
- The selection of existing facility footprints and government-owned land successfully avoids all physical displacement. Where temporary economic displacement may occur (e.g., restricted access for informal roadside traders or waterfront users), the integration of a Livelihood Restoration Plan (LRP) is the preferred approach to mitigate these socio-economic impacts.
- Site-specific engineering and construction alternatives—such as elevated coastal foundations at Orimedu and strict zero-discharge protocols at the Ejirin and Solu-Alade waterfronts—were selected to directly minimise potential adverse environmental impacts, particularly concerning soil erosion, groundwater contamination, and the sensitive aquatic ecology of the Ibeju-Lekki coastal corridor.
- Green building design is preferred over conventional design due to improved energy efficiency, reduced operational costs, and alignment with AfDB climate-smart infrastructure principles.
- Climate-resilient design is essential given Lagos's vulnerability to flooding, heatwaves, and rising coastal environmental pressures.
- An AfDB-aligned Healthcare Waste Management Plan (HMWMP) is mandatory and preferred over open burning or uncontrolled disposal.
- Local content and economic development are integrated into project design to maximise community benefits through job creation, procurement opportunities, and skill development.

This ESIA report covers only Ibeju-Lekki Axis Group 5, comprising Agbowa, Ejirin, Solu-Alade, and Orimedu PHCs. The preferred option for this cluster is construction & refurbishment and/or improvement works with climate-resilient design, appropriate drainage,

service optimisation, and AfDB-aligned waste management is environmentally and socially sound. It delivers substantial public health benefits to residents of the Ibeju-Lekki Axis Group 5 and creates local employment and business opportunities.

The project is therefore recommended for approval by the Federal Ministry of Environment (FMEnv) and the African Development Bank (AfDB).

CHAPTER THREE – PROJECT DESCRIPTION

3.1 Background and Overview

The Lagos State Health Infrastructure Project (LSHIP) is a US$200 million AfDB-financed programme designed to fundamentally transform healthcare delivery across Lagos State. The project addresses critical gaps in primary, secondary, and tertiary healthcare infrastructure through a coordinated, multi-component strategy that integrates physical infrastructure, diagnostic capacity, workforce development, and pandemic preparedness (Lagos State Ministry of Health, 2025).

The project is being implemented by the Lagos State Ministry of Health (LSMoH) through a dedicated Project Implementation Unit (PIU). Implementation leverages a mixed model: direct procurement for construction and refurbishment, and structured Public-Private Partnerships (PPPs) for diagnostic services.

Engineering design parameters – including right-of-way width of 20–30 metres for access roads at Agbowa and Orimedu, elevated reinforced concrete raft foundations with finished floor level 0.5 metres above existing grade, and marine-grade aluminium-zinc roofing – define the project's physical footprint and receptor interface for the four Primary Healthcare Centres (PHCs) in the Epe/Ibeju-Lekki Axis (Group 5).

For the Epe/Ibeju-Lekki Axis (Group 5), the LSHIP comprises four PHC facilities with direct physical footprints.

Table 3.1: Project Component and Intervention Mapping – Group 5

Component	**Description**	**Epe/Ibeju-Lekki Axis (Group 5)**	**Intervention Type**
Component 1: Primary Health Infrastructure	New climate-resilient PHCs	1 (Agbowa PHC)	New Construction (Greenfield development to replace failed infrastructure)
Component 1: Primary Health Infrastructure	New climate-resilient PHCs	1 (Orimedu PHC)	New Construction (Greenfield development)

Component	Description	Epe/Ibeju-Lekki Axis (Group 5)	Intervention Type
Component 1: Primary Health Infrastructure	Existing PHC refurbishment	2 (Ejirin PHC, Solu-Alade PHC)	Total Revitalisation (Rehabilitation, damp-proofing, and expansion)

Source: Lagos State Ministry of Health (2025); Multiple Development Services (2026)

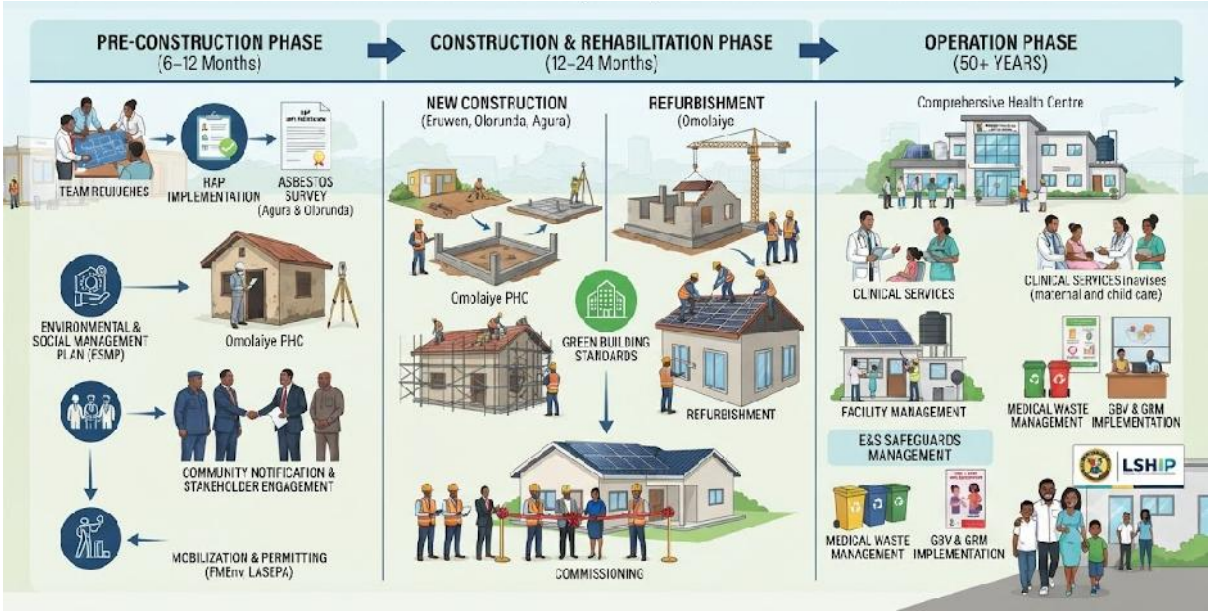


Figure 3.1: Project phase

3.2 Project Location – Epe/Ibeju-Lekki Axis (Group 5)

3.2.1 Geographic Overview

The Epe/Ibeju-Lekki Axis (Group 5) is a critical geographic cluster within the LSHIP. This axis is characterised by its unique coastal positioning, rural-urban transition, and proximity to the international border, all of which dictate the structural and environmental requirements of the healthcare facilities.

Geographic positioning

The Group 5 cluster is strategically located within the eastern development corridor of Lagos State, spanning the Epe and Ibeju-Lekki Local Government Areas.

Coastal corridor: The facilities are distributed across a mix of coastal, lagoon, and inland lowland environments, stretching between the Lekki Lagoon, adjoining wetlands, and the Atlantic coastal belt. This geographic setting exposes the facilities to high humidity, seasonal

flooding, and fragile wetland ecosystems, particularly in riverine and coastal communities such as Orimedu.

Emerging growth corridor influence: Situated along the rapidly developing Lekki-Epe growth axis, this cluster lies within one of the most significant economic expansion zones in Nigeria. The presence of major developments such as the Lekki Free Trade Zone, Dangote Refinery, and Lekki Deep Sea Port has transformed the area into a high-growth corridor. This has increased population influx, mobility, and demand for healthcare services, thereby elevating the strategic importance of PHCs within the axis as critical service hubs for both indigenous communities and migrant populations.

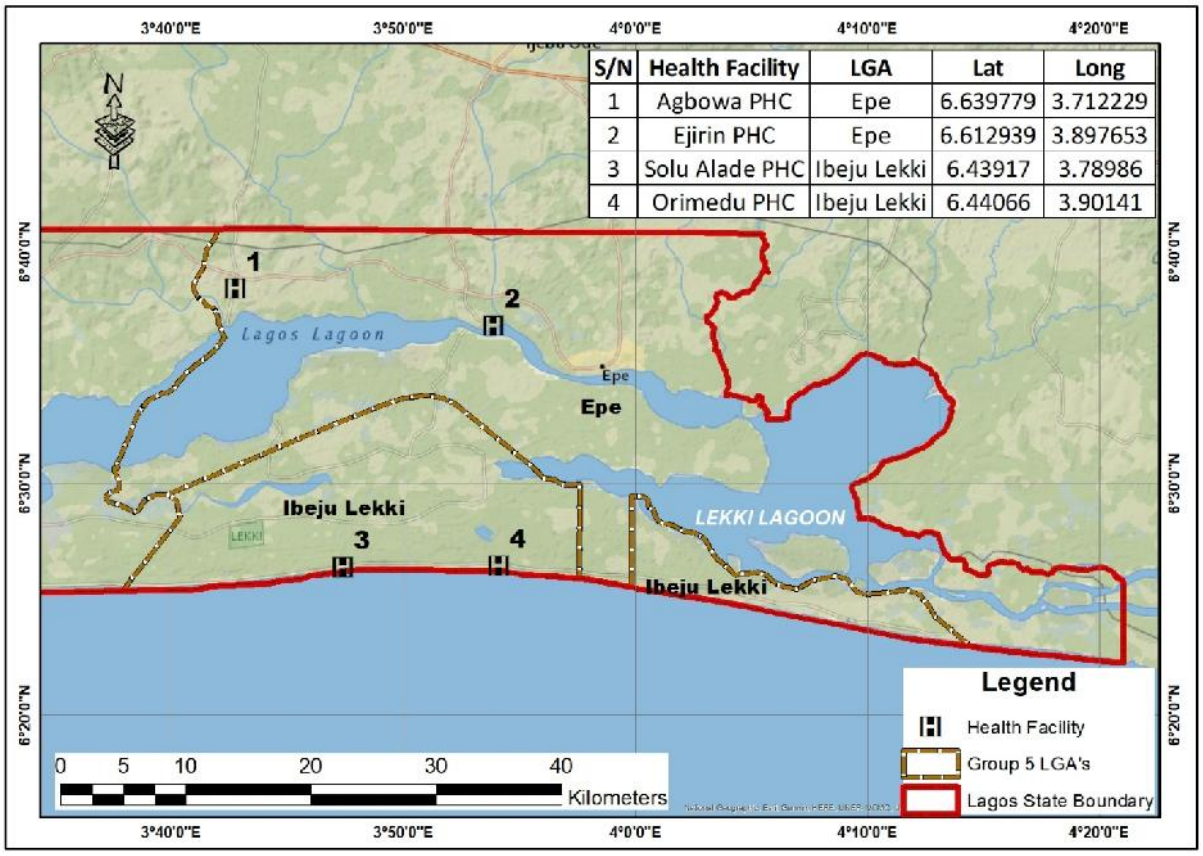


Figure 3.2: Map of Epe/Ibeju-Lekki Axis (Group 5) Showing All 4 Project Sites

Source: Multiple Development Services (2026)

Site-specific coordinates and locations

The Group 5 cluster comprises four strategically distributed PHC nodes – Agbowa, Ejirin, Solu-Alade, and Orimedu – which collectively provide a functional healthcare network across inland, riverine, and coastal communities within the Epe/Ibeju-Lekki corridor.

Table 3.2: Site Locations and Geographic Context – Group 5

Facility	Specific Location	Geographic Context

Agbowa PHC	Agbowa Town, Ikosi-Ejirin LCDA	Inland semi-urban settlement; located along accessible road corridor; serves as central node
Ejirin PHC	Ejirin Community, Epe Axis	Peri-urban riverine settlement; flood-prone with active market and fishing economy
Solu-Alade PHC	Solu-Alade, Epe Axis	Rural agrarian settlement; low-density with poor road access and limited infrastructure
Orimedu PHC	Orimedu, Eti-Osa (Ibeju-Lekki Axis)	Coastal lowland settlement; environmentally sensitive with flooding and erosion risks

Source: Multiple Development Services (2026)

Table 3.3: Site Details – Group 5 (Epe/Ibeju-Lekki Axis)

S/N	Site Name	LGA	LCDA	GPS Coordinates	Address/Landmark	Project Type
1	Agbowa PHC	Epe	Ikosi-Ejirin LCDA	6.6398° N, 3.7122° E	Agbowa Town, along Epe-Ikorodu corridor	New Construction
2	Ejirin PHC	Epe	Ikosi-Ejirin LCDA	6.6129° N, 3.8977° E	Ejirin Community, near market/riverine axis	Refurbishment
3	Solu-Alade PHC	Ibeju-Lekki	Ibeju-Lekki LCDA	6.4392° N, 3.7899° E	Solu-Alade rural settlement, inland agrarian community	Refurbishment
4	Orimedu PHC	Ibeju-Lekki	Ibeju-Lekki LCDA	6.4407° N, 3.9014° E	Orimedu coastal community, Eti-Osa axis	New Construction

Source: Lagos State Ministry of Health (2025); Multiple Development Services (2026)

Technical note on project typology

Agbowa PHC is designated for new construction (Greenfield development) in order to accommodate increasing service demand within the rapidly growing Agbowa urban corridor.

Orimedu PHC is also classified for new construction (Greenfield development) due to its coastal location and the need to provide a more resilient and strategically sited facility capable of serving dispersed riverine and coastal settlements within the Eti-Osa axis environment.

Ejirin PHC is categorised under intensive refurbishment (major revitalisation) to upgrade existing infrastructure and improve functionality within a riverine settlement context. The intervention addresses service efficiency constraints, infrastructure wear, and accessibility challenges associated with its lagoon-adjacent location and market-driven population pressure.

Solu-Alade PHC is also designated for refurbishment (rehabilitation works) to strengthen healthcare delivery capacity in a predominantly rural agrarian settlement. The scope focuses on upgrading existing structures and improving service readiness in response to low infrastructure provision and limited healthcare accessibility in the Epe inland axis.

3.2.2 Group 5 Characteristics

Based on the environmental baseline for the Agbowa, Ejirin, Solu-Alade, and Orimedu corridor, the following physical and social characteristics define the project area.

Topography

The terrain across the Group 5 cluster is generally flat to gently undulating, particularly in Orimedu and Ejirin, with sections of coastal lowlands and lagoon-adjacent terrain. Most sites lie at relatively low elevations, typically within coastal and near-coastal plain settings, making them susceptible to seasonal flooding and surface water accumulation. The area is largely composed of unconsolidated coastal plain sands and alluvial deposits, resulting in variable soil stability and localised poor drainage conditions, especially in riverine and wetland-adjacent settlements such as Ejirin and Orimedu.

Hydrology

The axis is flanked by the Lekki Lagoon to the north and the Atlantic Ocean to the south. Groundwater levels are extremely shallow, often reaching one to two metres below the surface, which complicates foundation works for new construction at Agbowa and Orimedu. Natural drainage is sluggish; rainwater tends to settle in depressions, leading to localised waterlogging in the rural settlements of Solu-Alade and Ejirin.

Land use

The axis is characterised by a combination of agricultural land, dispersed residential settlements, and expanding peri-urban development corridors, particularly around Agbowa and Ejirin. The PHCs serve as key social infrastructure nodes within their communities, often surrounded by informal economic activities such as roadside trading and small-scale markets.

Surrounding land use is predominantly subsistence farming (cassava, vegetables, and oil palm) in inland areas, while Ejirin and Orimedu also support fishing and lagoon-based livelihoods.

Access

The Lekki-Epe Expressway serves as the primary transport spine connecting the cluster to metropolitan Lagos and facilitates the movement of people and medical supplies. Access to Solu-Alade and Orimedu is constrained by secondary and tertiary roads, some of which are unpaved or seasonally affected by flooding. Agbowa and Ejirin benefit from comparatively better connectivity. The spatial configuration supports a feeder system toward secondary healthcare facilities in Epe and the Lekki axis, but emergency response times may be affected in remote or flood-prone settlements.

Environmental sensitivities

The axis is environmentally sensitive due to its proximity to lagoon systems, wetlands, and coastal lowlands, making it vulnerable to seasonal flooding and waterlogging. The high saline content in the air and groundwater causes accelerated corrosion of metallic structures and degradation of building carcasses. Coastal and riverine communities such as Orimedu are exposed to gradual erosion and shoreline instability, affecting long-term infrastructure sustainability. Inadequate drainage infrastructure across most sites exacerbates flooding and environmental health risks during the rainy season.

Social sensitivities

Communities within the cluster rely heavily on the PHCs for maternal, child health, and basic emergency services due to limited alternative healthcare facilities. Many residents are low-income households engaged in farming and fishing, making them sensitive to any disruption in healthcare access or mobility during construction phases. The communities are closely knit with strong reliance on traditional leadership and community associations for decision-making and stakeholder engagement. Construction activities must consider protection of farmlands, fishing routes, and market access points, as these form the backbone of household livelihoods, particularly in Ejirin and Orimedu.

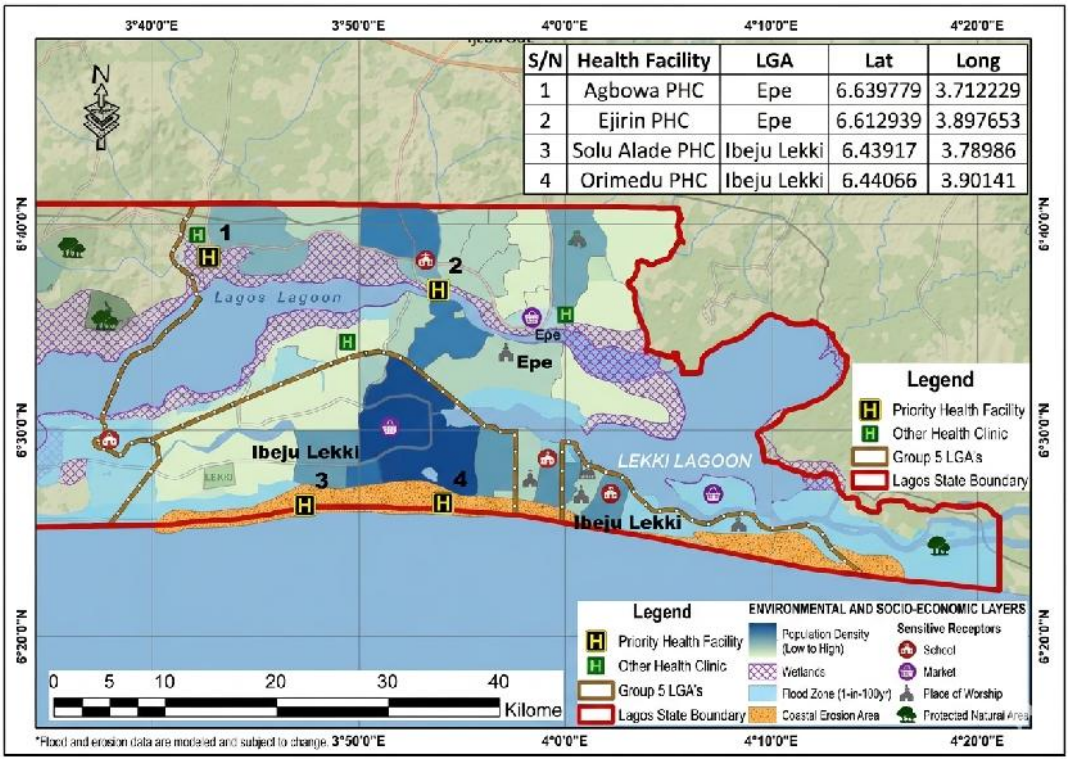


Figure 3.3: Detailed Map of Group 5 (Epe/Ibeju-Lekki Axis) Showing Topography, Wetlands, Flood Zones, Erosion-Prone Areas, Water Bodies, Population Density, and Sensitive Receptors

Source: Multiple Development Services (2026)

3.3 Project Particulars

3.3.1 New Construction Facilities (Agbowa and Orimedu PHCs)

Agbowa PHC and Orimedu PHC are designated for greenfield development. Their primary objective is to enhance healthcare delivery, specifically regarding maternal and child health outcomes, by implementing infrastructure modernisation and ensuring environmental sustainability.



Figure 3.4: Picture of the Prototype of the Proposed PHCs for Construction

B. Site-Specific Scopes of Work

Table 3.4: New Construction Facilities – Group 5

Facility	LGA/LCDA	Safeguard Requirement	Key Rationale
Agbowa PHC	Ikosi-Ejirin LCDA	ESIA	Greenfield development to address increasing demand within a growing peri-urban corridor; requires climate-resilient design, improved drainage systems, and sustainable

			infrastructure to support expanding population pressures
Orimedu PHC	Ibeju-Lekki LGA	ESIA	New construction in a coastal settlement; requires elevated structural design, flood mitigation measures, and corrosion-resistant materials due to high exposure to coastal and lagoon environmental conditions

Source: Multiple Development Services (2026)

3.3.2 New PHC Design Features

The following design features are tailored to the specific geographical and socio-economic challenges of the Epe/Ibeju-Lekki coastal corridor, focusing on durability, energy independence, and community accessibility.

Table 3.5: PHC Design Features (Agbowa and Orimedu PHCs)

Feature	Technical Specification	Environmental & Social Benefits
Flood-Resilient Substructure	Elevated finished floor levels (FFL) and reinforced concrete raft foundations designed for high water tables	Environment: Prevents structural damage during seasonal flooding. Social: Ensures the facility remains operational and accessible during extreme weather events
Corrosion-Resistant Materials	Use of aluminium-zinc alloy roofing sheets and marine-grade protective coatings on all external metalwork	Environment: Reduces waste by extending the lifespan of building materials in high-salinity air. Social: Lowers long-term maintenance costs for the local healthcare board
Hybrid Solar Power System	Photovoltaic (PV) arrays with lithium-ion battery storage and smart inverter systems	Environment: Reduces carbon footprint and reliance on fossil-fuel generators. Social: Guarantees 24/7 power for vaccine cold-chains, emergency lighting, and nighttime deliveries
Advanced WASH Infrastructure	Solar-powered boreholes with integrated multi-stage filtration and elevated storage tanks	Environment: Prevents groundwater depletion and contamination. Social: Provides patients and the surrounding community with consistent access to potable water

Integrated Waste Management	Colour-coded segregation bins and on-site lined deep-pit incinerators or secure sharps pits	Environment: Prevents medical waste from leaching into the coastal ecosystem or lagoon. Social: Protects healthcare workers and the community from needle-stick injuries and infections
Universal Accessibility (PWD)	Anti-skid ramps with 1:12 gradients, wider doorways, and specialised grab bars in sanitary sections	Environment: Promotes efficient use of space within the existing footprint. Social: Ensures inclusive healthcare access for elderly residents and persons with disabilities
Thermal Comfort Design	High ceilings, cross-ventilation window placement, and heat-reflective roof paint	Environment: Minimises the need for energy-intensive air conditioning. Social: Creates a dignified and comfortable recovery environment for mothers and newborns

Source: LSHIP Design Team; Multiple Development Services (2026)

Summary of impact for new construction

For Agbowa and Orimedu PHCs (Greenfield), these features allow for a complete reimagining of the facility as a modern flagship.



Figure 3.5: Typical Floor Plan of New PHC (Prototype Design)

Source: LSHIP Design Team



Figure 3.6: 3D Rendering of Typical New PHC (Exterior)

Source: LSHIP Design Team

3.3.3 Site-Specific Features – New Construction

Agbowa PHC

The site at Agbowa is erosion-prone, requiring engineered drainage and slope stabilisation. The access road is unpaved and requires upgrade.

Orimedu PHC

The site at Orimedu is adjacent to wetlands, requiring a 30 to 50 metre buffer zone. The access road is unpaved and requires upgrade.

3.4 Project Particulars – Refurbishment (Ejirin and Solu-Alade PHCs)

The refurbishment interventions under Group 5 focus on upgrading existing PHCs in Ejirin and Solu-Alade into improved, climate-resilient and functionally efficient healthcare facilities. These sites serve rural, peri-urban, and riverine populations where infrastructure gaps and environmental stressors have limited effective service delivery.

Table 3.6: Refurbishment Facilities – Group 5

Facility Name	LGA / LCDA	Development Class	Primary Structural Challenge
Ejirin PHC	Ikosi-Ejirin LCDA	Total Revitalisation	Structural deterioration influenced by riverine conditions, poor drainage, and compromised WASH facilities due to high groundwater levels and seasonal flooding

Solu-Alade PHC	Epe LGA	Total Revitalisation	Deteriorated roofing systems and aging building fabric within a rural agrarian setting, compounded by limited infrastructure and poor maintenance conditions

Source: Multiple Development Services (2026)

Table 3.7: Refurbishment Scope by Activity

Activity Category	Specific Scope of Works
Civil & Structural	Stripping of salt-damaged plaster; application of damp-proof membranes; repair of foundation settlements
Roofing & Ceiling	Removal of corroded sheets; installation of marine-grade aluminium-zinc roofing and moisture-resistant PVC ceilings
M&E Installations	Full electrical retrofitting for Hybrid Solar Systems; installation of energy-efficient LED lighting and inverter-compatible ACs
WASH Upgrades	Installation of solar-powered boreholes with multi-stage filtration; construction of lined, non-permeable septic tanks
Internal Remodelling	Reconfiguration of patient flow to expand maternal wards and ensure Infection Prevention and Control (IPC) compliance

Source: Multiple Development Services (2026)

Site-specific sensitivities – refurbishment

The refurbishment phase for Ejirin and Solu-Alade PHCs must address key environmental and social sensitivities to ensure safe implementation, regulatory compliance, and uninterrupted healthcare delivery across the Epe/Ibeju-Lekki corridor.

Table 3.8: Site-Specific Sensitivities – Refurbishment

Sensitivity Category	Management Requirement	Objective
Coastal Groundwater Protection	Construction activities must strictly prevent any chemical or sewage leakage into the shallow groundwater table	To protect the fragile riverine ecosystem and maintain the safety of local water sources

Service Continuity	Refurbishment must be phased, and temporary clinical stations must be established for essential care	To ensure uninterrupted access to immunisations and maternal services for riverine residents
Salt-Air Corrosion	All new installations (window frames, doors, and conduits) must be rated for high-salinity environments	To prevent premature material failure and reduce long-term maintenance costs in a coastal climate
Community Access	Logistics must account for limited road access, often requiring monitored water-based transport for materials	To manage the logistical challenges of the Eti-Osa axis while mitigating the risk of fuel spills into the lagoon
Waste Management	Safe decommissioning and disposal of hazardous old materials must strictly follow ESMP protocols	To ensure the responsible handling of legacy materials like contaminated plumbing or corroded roofing

Source: Multiple Development Services (2026)

Asbestos-Containing Materials (ACMs) are a legacy construction material common to older public health facilities across Lagos State, including the refurbishment sites (Ejirin and Solu-Alade) within this axis. No separate 'confirmation survey' is required for these legacy materials, as their presence is a known baseline condition consistent with the findings in the Ikorodu Axis (Group 4). Instead, the project adopts a standardized Asbestos Management Plan (AMP) (Appendix 6) that prescribes safe handling, wet removal, double-bagging, and licensed disposal protocols for all refurbishment works. By applying this procedural AMP, the residual risk is reduced to Moderate and is fully manageable through routine Occupational Health & Safety (OHS) controls, worker PPE (Type 5 coveralls, P3 respirators), and continuous air monitoring during abatement activities.



Plate 3.1: Agbowa PHC – existing site condition

Source: Multiple Development Services (2026)



Plate 3.2: Orimedu PHC – existing site condition

Source: Multiple Development Services (2026)



Plate 3.3: Ejirin PHC (before refurbishment)

Source: Multiple Development Services (2026)

3.5 Process Description

3.5.1 Pre-Construction Phase

The pre-construction phase is critical for the Epe/Ibe/--*-ju-Lekki Axis to ensure that engineering designs and environmental safeguards account for the unique riverine and coastal challenges of the project sites.

Table 3.9: Pre-Construction Activities for Group 5

Activity	Description	Duration	Responsible	E&S Considerations
Site Handover & Mobilisation	Formal handover of sites to the contractors and establishment of temporary site offices/laydown areas	2 Weeks	Ministry of Health / Project PIU	Ensure site clearing does not disrupt local community access or damage adjacent private properties

Topographic & Hydrogeological Surveys	Detailed mapping of elevations and groundwater levels to finalise flood-resilient foundation designs	3 Weeks	Lead Engineering Consultant	Identifying flood-prone zones to minimise land disturbance and avoid siltation of nearby water bodies
Stakeholder & Community Engagement	Town hall meetings with local leaders and residents to discuss project timelines	Ongoing (Pre-start)	Safeguards Team / LSHIP PIU	Addressing community concerns regarding service disruptions and prioritising local labour recruitment
Development of Site-Specific ESMP	Tailoring the management plan to address specific risks like saltwater intrusion and medical waste handling	4 Weeks	Environmental Consultant	Ensuring all mitigation measures for the coastal ecosystem are documented and integrated into the works contract
Permitting & Regulatory Approvals	Obtaining necessary clearances from LASEPA and other relevant Lagos State planning authorities	4–6 Weeks	LSHIP PIU / Contractor	Ensuring full compliance with state environmental laws to prevent legal or environmental delays
Temporary Service Setup	Establishment of temporary clinical booths to maintain maternal and	3 Weeks	Facility Managers / Contractor	Ensuring the temporary site is safe, hygienic, and accessible for

	immunisation services during works			elderly and vulnerable patients
Baseline Air & Water Quality Testing	Recording pre-construction environmental parameters to monitor future construction impacts	1 Week	Environmental Specialist	Establishing baseline values for compliance monitoring

Source: Multiple Development Services (2026)

Key strategic focus for Group 5

Given the Epe/Ibeju-Lekki context, the pre-construction phase places a heavy emphasis on hydrogeological surveys due to the high water table, and community engagement to manage the logistics of riverine material transport.

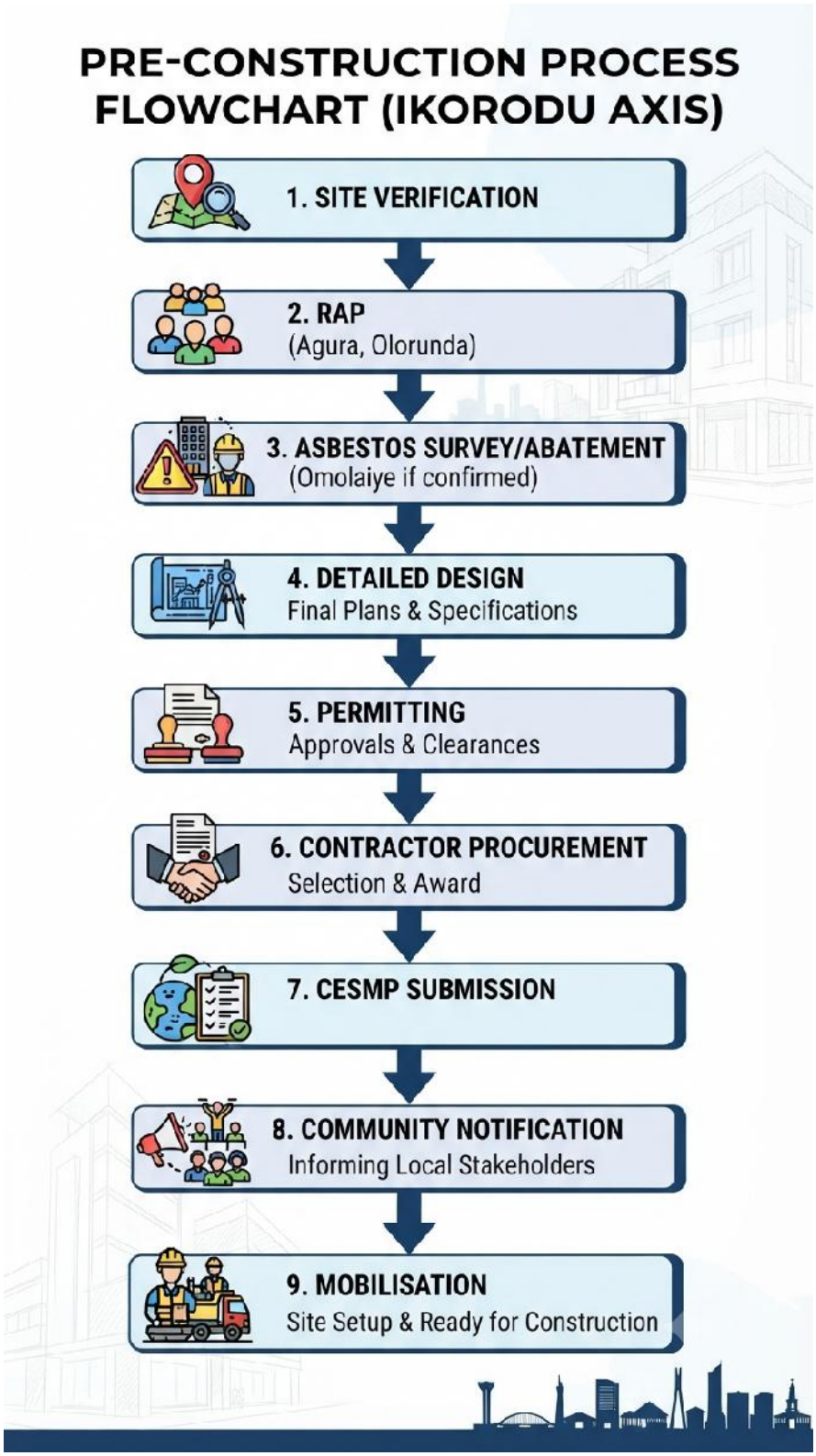


Figure 3.7: Pre-Construction Process Flowchart (Group 5)

Source: Multiple Development Services (2026)

3.5.2 Construction Phase – New Construction (Agbowa and Orimedu PHCs)

The construction phase for Agbowa and Orimedu PHCs is specifically designed to address the transition from existing conditions to new flagship developments, with a heavy emphasis on engineering for high water tables and coastal vulnerability.

Table 3.10: Construction Activities for New Construction Sites

Activity	Description	Duration	Responsible	E&S Considerations
Site Decommissioning Plan	Formalising the safety and environmental plan for the demolition of any existing structures	2 Weeks	Lead Consultant / PIU	Ensuring hazardous materials (e.g., old pipes or treated timber) are identified and earmarked for safe disposal
Geotechnical & Soil Investigation	Specialised testing to determine soil bearing capacity for reinforced raft foundations	2 Weeks	Geotechnical Engineer	Minimising site vibration to prevent further destabilisation of adjacent coastal land
Hydrological Modelling	Assessing peak flood levels to determine the required Finished Floor Level (FFL)	3 Weeks	Hydrologist / Civil Engineer	Ensuring the design does not redirect floodwaters into neighbouring residential properties
Environmental & Social Impact Assessment (ESIA)	Detailed assessment of the impacts of a new-build project on the coastal	6–8 Weeks	Environmental Consultant	Protecting local biodiversity and ensuring the project complies with the Nigeria

	ecosystem and community			Climate Change Act 2021
Community Sensitisation	Engagement with the local communities regarding demolition schedule and construction noise	Ongoing	Safeguards Team / CLO	Managing expectations regarding employment and ensuring the safety of children near the demolition site
Contractor Onboarding (E&S)	Briefing the selected contractor on the strict Environmental & Social Code of Conduct and OHS requirements	1 Week	LSHIP PIU / Safeguards Lead	Ensuring zero tolerance for Gender-Based Violence (GBV) and enforcing high safety standards in a riverine terrain
Establishment of Site Boundaries	Clear demarcation of the project footprint to prevent encroachment onto communal or private land	1 Week	Surveyor / Contractor	Preventing land disputes and unauthorised access

Source: Multiple Development Services (2026)

3.5.3 Construction Phase – Refurbishment (Ejirin and Solu-Alade PHCs)

The construction phase for the refurbishment sites in Group 5 is characterised by total revitalisation. Because these works occur within active or semi-active clinical environments in a riverine corridor, the focus is on speed, material durability, and maintaining community access.

Table 3.11: Construction Activities for Refurbishment Sites

Activity	Description	Duration (Typical)	E&S Considerations
Stripping & Internal Demolition	Removal of salt-corroded plaster, damaged floor tiles, and compromised internal partitions	2–3 Weeks	Waste Management: Proper containment of dust and safe disposal of debris to prevent blockage of coastal drainage channels
Structural Remediation & Damp-Proofing	Application of chemical DPCs (Damp Proof Courses) and structural patching to address rising damp and saltwater intrusion	3–4 Weeks	Chemical Safety: Ensuring that damp-proofing chemicals are non-toxic to the shallow groundwater table
Roofing & Ceiling Overhaul	Replacement of existing roofs with marine-grade aluminium-zinc sheets and installation of moisture-resistant PVC ceilings	3 Weeks	Occupational Health & Safety (OHS): Fall protection for workers and ensuring no old roofing materials (possible asbestos) contaminate the site
M&E Retrofitting & Solar Installation	Rewiring for energy efficiency and installation of the Hybrid Solar Power system (PV arrays and battery storage)	4 Weeks	Resource Efficiency: Proper recycling of old copper wiring and responsible sourcing of solar components
WASH & Plumbing Upgrades	Modernising toilets, installing solar-powered borehole pumps, and constructing lined, non-permeable septic tanks	4 Weeks	Sanitation: Preventing any raw sewage discharge into the riverine ecosystem during the transition from old to new systems

Finishing & Anti-Corrosive Painting	Application of high-durability, weather-shield paints and installation of specialised fixtures for saline environments	3 Weeks	Air Quality: Use of Low-VOC (Volatile Organic Compound) paints to ensure a safe indoor environment for mothers and newborns
External Works & Accessibility	Installation of PWD-compliant anti-skid ramps and site-specific perimeter drainage	2 Weeks	Universal Access: Ensuring the facility is inclusive for persons with disabilities and the elderly

Source: Multiple Development Services (2026)

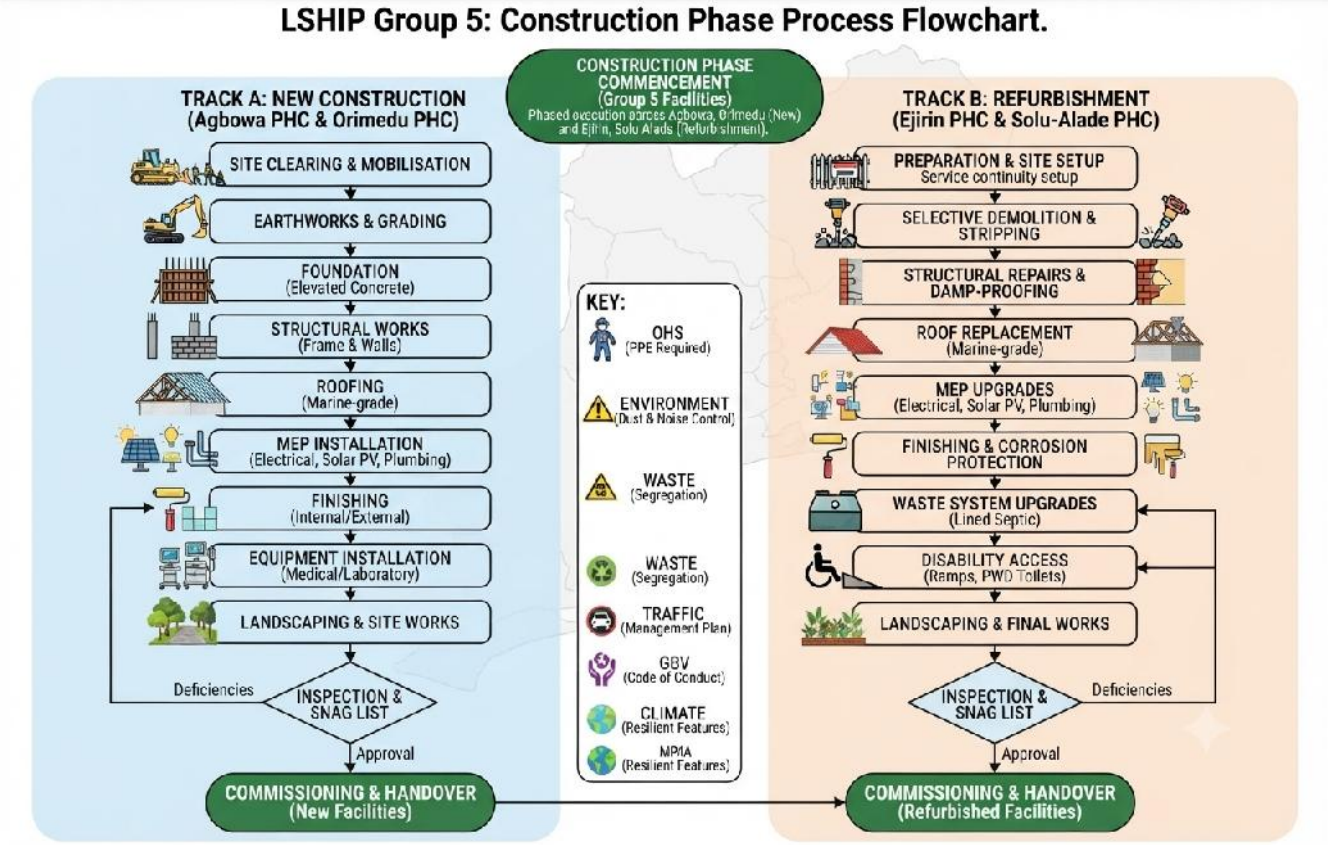


Figure 3.8: Construction Phase Process Flowchart (Group 5)

Source: Multiple Development Services (2026)

3.6 Project Resources

3.6.1 Labour Requirements

Table 3.12: Labour Requirements by Category – Group 5

Labour Category	Estimated Number of Workers	Source of Labour Force	Accommodation
Skilled Labour (Engineers, Solar Technicians, Foremen)	12–15	Main Contractor (Regional/Lagos-based)	Off-site; local guest houses or daily transport from surrounding urban hubs
Semi-Skilled Labour (Masons, Plumbers, Electricians, Carpenters)	25–30	Local sub-contractors within Epe and Ibeju-Lekki LGAs	Community-based; workers reside in their own homes within the project axis
Unskilled Labour (General labourers, Site cleaners, Excavators)	40–50	Immediate host communities (Agbowa, Ejirin, Solu-Alade, Orimedu)	Community-based; living in their respective local residences
Safeguards & Security (E&S Officers, HSE, Site Security)	8–10	Contractor and local community vigilante groups	Security resides locally; E&S/HSE officers use regional off-site housing
Total Peak Workforce	**85–105**	Mixed (Local & Regional)	Non-Residential Site Office

Source: Multiple Development Services (2026)

Key labour management principles for Group 5

Local content priority: In line with the LSHIP social safeguard goals, at least 70 percent of unskilled and semi-skilled roles are sourced directly from the host communities to stimulate the local economy.

Zero-camp policy: To prevent social friction and pressure on the fragile coastal infrastructure, no residential labour camps are established on-site. Workers are either local residents or are transported to the site daily.

Gender and inclusion: Recruitment actively encourages the participation of women in non-hazardous roles and ensures that the workforce adheres to a strict Code of Conduct regarding Gender-Based Violence (GBV) and community interactions.

OHS compliance: Given the riverine terrain, all workers undergo specific safety inductions for coastal operations, including the use of life jackets where water-based material transport is required.

Total estimated peak workforce for Group 5 is 110 to 135 workers across four sites, phased. Local hiring target is 70 percent or more of unskilled and semi-skilled labour from the host communities within the Epe and Ibeju-Lekki LGAs. Labour influx risk is low to medium due to the smaller workforce size and the zero-camp policy.

3.6.2 Material Requirements

The material strategy for the Agbowa, Ejirin, Solu-Alade, and Orimedu PHCs is designed to ensure climate resilience, structural durability, and environmental protection within the coastal, riverine, and inland wetland conditions of the Epe/Ibeju-Lekki axis. Emphasis is placed on materials that can withstand high moisture levels, flooding risks, and long-term operational demands.

Table 3.13: Material Requirements – Group 5

Material	Estimated Quantity	Source of Materials	Environmental & Social (E&S) Considerations
Sulphate Resistant Cement	5,000–6,000 bags	Local distributors (Epe / Lekki / Lagos axis)	**Environmental**: Selection of suppliers with sustainable manufacturing practices; dust suppression during transport, storage, and on-site mixing to reduce particulate emissions and GHG footprint. **Social:** Provision of PPE for workers handling

			cement and implementation of community dust-control measures to minimise nuisance to nearby residents.
River Sand & Sharp Sand	1,300–1,600 m³	Licensed local borrow pits in Lagos/Ogun. The designated borrow pit has an approximate surface area of 100 m × 80 m (8,000 m²) with a controlled excavation depth of 2–3 m, subject to regulatory approval and site-specific conditions.	**Environmental:** Sand shall be sourced only from licensed inland borrow pits to prevent coastal erosion and degradation of beaches and wetlands. Borrow pit dimensions, extraction depth, and rehabilitation plans shall be documented in the project records and monitored throughout extraction activities. **Social:** Engagement with host communities and landowners to avoid conflicts over resource extraction and access routes.
Granite / Crushed Rock	1,000–1,300 m³	Inland quarries (Ogun State corridor)	**Environmental:** Minimise carbon emissions through efficient logistics planning and sourcing from approved quarries with environmental permits. **Social:** Traffic management measures, driver training, speed controls, and road safety awareness shall be implemented to reduce risks to local communities along haulage routes.

Reinforcement Steel (Various Diameters)	50–70 Tons	Regional suppliers (Lagos)	**Environmental:** Proper sizing, cutting schedules, and reuse of off-cuts to minimise scrap generation and resource wastage. **Social:** Safe material handling procedures and worker training to reduce occupational injuries associated with steel fabrication and installation.
Marine Grade Aluminium Zinc Roofing	2,500–3,000 m²	Specialised regional manufacturers	**Environmental:** Use of corrosion-resistant roofing materials to extend service life and reduce future material replacement and waste generation. **Social:** Safe installation practices, including working-at-height controls and use of fall-protection equipment.
Solar PV Panels & Lithium Batteries	130–170 panels / 50–60 batteries	Verified LSHIP technology partners	**Environmental:** Establish a manufacturer or supplier take-back agreement for batteries and solar components at end-of-life to prevent hazardous e-waste disposal. **Social:** Training of facility personnel on safe handling, storage, and emergency response procedures related to battery systems.
Potable Water (Construction)	300,000–400,000 litres	Licensed water tankers / On-site boreholes	**Environmental:** Monitor groundwater abstraction rates to prevent over-extraction and saltwater intrusion into local aquifers; prioritise water conservation

			measures. **Social:** Ensure water sourcing does not reduce access to potable water for surrounding communities during construction activities.
Anti-Corrosive Paints & Sealants	900–1,200 gallons	Regional manufacturers	**Environmental:** Use only low-VOC products to maintain indoor air quality and minimise atmospheric emissions. Ensure proper storage and disposal of containers and residual materials. **Social:** Protect workers and building users through adequate ventilation, PPE use, and adherence to occupational health and safety requirements during application.

Source: Multiple Development Services (2026)

Material Sourcing and Local Content Targets:

Material Category	Local Sourcing Target	Rationale
Cement	≥60%	Readily available locally; supports local distribution
Sand and Gravel	≥80%	Abundant local sources; reduces transport emissions and cost
Concrete Blocks	≥80%	Multiple local manufacturers; supports local industry
Steel	≥40%	Limited local manufacturing; regional sourcing feasible
Plumbing Materials	≥70%	Widely available in local hardware stores
Electrical Materials	≥60%	Available through local distributors
Paints and Finishing	≥70%	Local manufacturing available
Wood/Formwork	≥80%	Local timber markets available
Solar Panels	≤20%	Limited local manufacturing; imported essential

Batteries	≤10%	Limited local manufacturing; imported essential

Key logistical and E&S notes for Group 5

Transport sensitivity: While the Lekki-Epe Expressway provides primary access to parts of the cluster, several communities – particularly Orimedu and sections of Ejirin – experience limited or seasonal road accessibility. Movement of materials may therefore require careful logistics planning using smaller vehicles.

Storage protocols: Due to high humidity, periodic flooding, and shallow groundwater conditions, critical materials such as cement and reinforcement steel must be stored in elevated, well-ventilated, and moisture-proof temporary storage facilities.

Local sourcing: In line with social safeguard objectives, priority will be given to sourcing basic construction materials (e.g., sand, blocks, and timber from certified sustainable sources) from local suppliers within the Epe/Ibeju-Lekki axis. This approach supports the local economy, reduces transportation impacts, and enhances community participation in the project.

3.6.3 Equipment Requirements

The equipment deployment for the Agbowa, Ejirin, Solu-Alade, and Orimedu sites is scaled to accommodate both the new construction requirements of flagship facilities and the sensitive refurbishment needs of existing structures in a coastal terrain.

Table 3.14: Equipment Requirements – Group 5

Equipment	Estimated Quantity	Fuel / Power	Revised Environmental & Social (E&S) Consideration
Excavator / Backhoe	1–4 Units	Diesel	Environmental: Restrict operating hours to minimise noise, vibration, and air emissions. Routine maintenance shall be undertaken to reduce exhaust emissions and fuel leaks. Social: Schedulingof excavation works shall minimise disturbance to patients, healthcare workers, and nearby residents. Operators shall be trained in safe equipment operation and community safety protocols.

Concrete Mixer (Mobile)	3–4 Units	Diesel / Petrol	Environmental: Operate on lined or designated surfaces to prevent cement slurry runoff and soil contamination. Washout areas shall be properly contained. Social: Workers shall receive training on safe handling of cement and concrete. Mixing activities shall be managed to minimise dust and noise impacts on nearby communities and health facilities.
Vibratory Plate Compactor	4 Units	Petrol	Environmental: Monitor vibration levels and maintain equipment to reduce noise emissions. Social: Use shall be carefully controlled near existing buildings and healthcare facilities to prevent structural damage and disturbance to occupants. Advance notification shall be provided where vibration-intensive activities are planned.
Water Tanker (10,000 L)	4 Units	Diesel	Environmental: Used for dust suppression and air quality management during dry periods. Measures shall be implemented to prevent fuel spills during refuelling. Social: Vehicle movement shall be planned to avoid disruption to local traffic and pedestrian activities, particularly around schools, markets, and health facilities.
Dumper Truck (Small/Medium)	6 Units	Diesel	Environmental: Vehicle maintenance and route optimisation shall be

			implemented to reduce emissions and fuel consumption. Social: Strict speed limits, driver awareness training, signage, and traffic management measures shall be enforced to protect pedestrians, cyclists, and local residents along haulage routes.
Light Commercial Vehicles (Pickup)	4–6 Units	Petrol	Environmental: Vehicles shall be regularly inspected to prevent oil leaks and excessive emissions. Social: Drivers shall comply with road safety regulations and community speed limits. Vehicle movements shall be coordinated to minimise disruption to local activities and access routes.
Pumping Machines (Submersible)	4 Units	Electric / Petrol	Environmental: Dewatering discharge shall be filtered and controlled to prevent sedimentation and lagoon siltation. Social: Water management activities shall avoid impacts on neighbouring properties and community water resources. Appropriate warning signs shall be installed around pumping areas to prevent accidents.
Hand-held Power Tools	Various	Electric (Battery/Generator)	Environmental: Use energy-efficient equipment and silenced generators to minimise noise and emissions. Social: Workers shall be provided with appropriate PPE, training, and supervision to reduce

			risks of injury, electric shock, and occupational accidents, particularly under humid coastal conditions.
Barges / Support Boats	1–2 Units	Marine Diesel	Environmental: Spill kits shall be available on board, and vessel maintenance shall prevent fuel and oil discharges into the lagoon ecosystem. Social: Navigation shall comply with local waterway safety regulations. Boat operators shall be trained in emergency response procedures, and community fishing and transport activities shall be considered to avoid conflicts and safety risks.

Source: Multiple Development Services (2026)

Key equipment management protocols for Group 5

Maintenance logs: All heavy machinery (excavators and trucks) must undergo regular maintenance to prevent fuel or hydraulic fluid leaks, which are particularly hazardous in the coastal and riverine ecosystem of Group 5.

Spill containment: Contractors are required to maintain drip trays under all stationary motorised equipment and keep spill kits (absorbent mats or sand) readily available at each site.

Fuel storage: Fuel for equipment must be stored in a centralised, bunded area with secondary containment to prevent accidental discharge into the high-water-table soil.

Decommissioning: Upon project completion, all equipment and any contaminated soil from the workshop area must be removed and the site restored according to the ESMP restoration guidelines.

3.7 Environmental Releases and Waste

3.7.1 Air Emissions

Managing air quality is essential in the Epe/Ibeju-Lekki corridor to protect the health of patients at active facilities, as well as residents in surrounding coastal communities.

Table 3.15: Air Emission Sources and Mitigation

Source	Pollutant	Mitigation

Demolition & Site Clearing (Agbowa and Orimedu PHCs)	Dust and Particulate Matter (PM10, PM2.5)	Regular water sprinkling of work areas; use of dust screens/nets around the site perimeter during demolition
Excavation & Earthworks	Wind-blown Dust (PM10)	Covering of all transported sand and soil with tarpaulins; prompt compaction of filled areas
Construction Vehicles & Machinery	Nitrogen Oxides (NO2), Sulphur Dioxide (SO2), Carbon Monoxide (CO)	Mandatory regular servicing of all diesel engines; no-idling policy for trucks waiting to offload materials
On-site Power Generation	CO2, SO2, and Particulates	Prioritising early installation of the Hybrid Solar System to reduce generator run-time; use of low-sulphur diesel
Surface Coating (Painting/Sealing)	Volatile Organic Compounds (VOCs)	Strict use of Low-VOC paints and adhesives; ensuring adequate cross-ventilation during internal application
Material Storage (Cement/Sand)	Fine Particulate Dust	Cement storage in enclosed, moisture-proof sheds; sand stockpiles kept damp or covered in windy conditions
Welding & Metal Fabrication	Metal Fumes and Ozone	Conducting welding in designated, well-ventilated areas away from patient wards; use of appropriate PPE for workers
Air Quality Management (Project-wide Mitigation)	All relevant pollutants (PM, NOx, SO_2, VOCs)	Air dispersion modelling shall be conducted where sensitive receptors (health facilities, residential areas, and coastal communities) may be impacted. The model results will inform buffer distances, site layout optimisation, scheduling of high-emission activities, and additional mitigation measures such as enhanced dust suppression and emission controls.

Source: Multiple Development Services (2026)

Specific Air Quality Controls for Group 5

Patient proximity: For the refurbishment sites (Ejirin and Solu-Alade), air quality monitoring is prioritised near maternal and paediatric wings to ensure that construction dust does not trigger respiratory distress in vulnerable patients.

Saline interaction: Because salt air can increase the rate of engine corrosion, construction machinery must be inspected weekly for exhaust system leaks to prevent excessive smoke emissions.

Community sensitivity: In riverine communities where air circulation may be affected by coastal humidity, specialised dust suppression is applied during the dry season to prevent particulates from settling on local fishing equipment and homes.

3.7.2 Noise

Managing noise is a high-priority safeguard for the Epe/Ibeju-Lekki Axis, particularly at Ejirin and Solu-Alade where clinical services must continue alongside refurbishment, and at Agbowa and Orimedu during new construction. The goal is to maintain a healing environment while executing structural upgrades.

Table 3.16: Noise Sources and Levels

Source	Typical Noise Level (dB(A) at 10m)	Mitigation
Concrete Mixers & Vibrators	75–85	Placing stationary equipment behind acoustic barriers or temporary plywood hoarding; regular lubrication of moving parts to reduce friction noise
Excavators & Heavy Trucks	80–90	Mandatory no-hunking policy within the hospital zone; ensuring all vehicle silencers and mufflers are in good working condition
Hand-held Power Tools (Drills, Saws)	75–80	Use of modern, low-noise electric tools; scheduling high-decibel internal works (e.g., wall chasing) during low-patient-traffic hours
Backup Generators	70–80	Housing generators in sound-attenuated enclosures; prioritising the early switch-over to the silent Hybrid Solar System

Material Loading/Unloading	65–75	Ensuring timber and metal pipes are placed rather than dropped; rubber matting on loading bays to dampen impact noise

Source: Multiple Development Services (2026)

Key noise management protocols for Group 5

Clinical continuity: For all sites, the contractor must coordinate with the Facility Manager to pause high-noise activities during critical clinical sessions, such as immunisation clinics or emergency procedures.

Sensitive receptors: Since the Epe/Ibeju-Lekki sites are often located in quiet riverine and coastal communities, no noisy construction activities are permitted after 6:00 PM or on Sundays to respect the local residents' rest periods.

Worker protection: All personnel operating equipment exceeding 85 dB(A) are mandated to wear appropriate ear protection (plugs or muffs) as part of the project's Occupational Health and Safety (OHS) compliance.

Community communication: For the new construction at Agbowa and Orimedu, the community will be notified 48 hours in advance of any scheduled high-decibel activities (e.g., foundation piling or heavy demolition).

Noise limits (NESREA): Residential daytime 55 dB(A), nighttime 45 dB(A) (National Environmental Standards and Regulations Enforcement Agency, 2009).

3.7.3 Wastewater

Table 3.17: Wastewater Sources and Management

Source	**Volume (Typical)**	**Pollutants**	**Mitigation**
Sanitary Wastewater (Toilets & Staff Quarters)	1.5–3.5 m^3/day (Per Facility)	Pathogens (coliforms), organic matter (BOD), nutrients (Nitrogen)	Upgraded Lined Septic Systems: Implementation of sealed, lined tanks to prevent seepage into the high coastal water table
Medical/Laboratory Liquid Waste	Low (0.2–0.5 m^3/day)	Disinfectants, chemicals, blood-borne pathogens,	Point-of-Source Pre-treatment: Neutralisation and disinfection before discharge into the sanitary

		pharmaceutical residues	system; avoid direct disposal to drains
Stormwater Runoff (Coastal/Riverine areas)	High (Seasonal/Flash floods)	Sediments, debris, surface oils, and faecal matter from open areas	Engineered Drainage: Construction of lined peripheral drains and silt traps to prevent direct runoff into the lagoon or nearby water bodies
Facility Laundry & Cleaning	0.5–1.2 m^3/day	Detergents, surfactants, and suspended solids	Filtration & Infiltration: Use of grease and silt traps and controlled discharge into designated soak-away pits located away from groundwater wells

Source: Multiple Development Services (2026)

Environmental controls for Group 5

Given the low-lying terrain, wetland systems, and shallow groundwater conditions across Agbowa, Ejirin, Solu-Alade, and Orimedu, site-specific environmental control measures are essential to protect both human health and the surrounding ecosystems.

Groundwater protection: Due to the proximity to the coast, all septic infrastructure must be strictly lined to prevent the contamination of the shallow aquifers used by local communities.

Regulatory alignment: Management practices are designed to meet both NESREA and LASEPA effluent discharge standards, specifically focusing on preventing lagoon eutrophication.

Medical waste integration: Liquid medical waste is managed through specialised containment to ensure that hazardous biological agents do not enter the general wastewater stream during peak rain events.

3.7.4 Solid Waste

Table 3.18: Solid Waste Types and Management

Waste Type	Source	Quantity (Estimated)	Hazardous?	Mitigation

Excavated Soil & Rubble	Foundation works, trenching, and site clearing	High (approx. 40% of total)	No	Reuse for backfilling or landscaping; transport clean fill to approved municipal sites
Demolition Debris	Removal of old walls, tiles, roofing, and damaged masonry	Moderate to High	No	Segregation of reusable bricks or blocks; crushing for use as sub-base for walkways
Hazardous Materials	Old paint cans, solvent containers, and used oils from machinery	Low	Yes	Collection in designated bunded areas; disposal through licensed hazardous waste handlers
Metal Scraps	Reinforcement bars (rebar), offcuts, pipes, and wiring	Moderate	No	On-site sorting for sale to local scrap metal recyclers for circularity
Packaging & Plastics	Cement bags, pallet wraps, and PVC pipe offcuts	Moderate	No	Compact and bundle for collection; discourage burning of bags on-site to prevent air pollution
Asbestos (Legacy)	Potential old roofing sheets or insulation in older PHC units (Solu-Alade suspected)	Site-Specific	Yes	Strict Protocol: Professional abatement; wetting to prevent dust; specialised burial at hazardous sites

Source: Multiple Development Services (2026)

Construction waste management protocols for Group 5

Waste segregation at source: Provide clearly labelled skips or designated areas for different waste streams (Metal, Rubble, General, Hazardous).

Storage and dust control: Stockpiles of sand or dry debris should be covered with tarpaulins to prevent runoff into coastal drainage systems during rains. Periodic damping (sprinkling water) minimises airborne dust affecting nearby patients or residents.

Compliance with LAWMA: All waste transport must be documented via waste manifests and managed by LAWMA-approved PSP (Private Sector Participation) operators.

Site housekeeping: Daily toolbox talks ensure workers do not dispose of food waste or personal litter within the construction debris.

3.8 Traffic Status and Forecast

3.8.1 Baseline Traffic

Based on baseline observations from the LSHIP and prevailing traffic patterns within the Lekki-Epe growth corridor, the Group 5 sites experience moderate but variable traffic conditions. This corridor reflects a transition from peri-urban to rural and riverine environments, with traffic volumes influenced by rapid urban expansion along the Lekki-Epe Expressway and reduced accessibility in inland and coastal settlements.

Table 3.19: Baseline Traffic by Site

Site	Road	AADT (Estimated)	LOS	Peak Hours
Agbowa PHC	Epe-Ikorodu Road / Agbowa Access Road	1,500–2,200	C–D	07:00–10:00; 16:30–19:00
Ejirin PHC	Ejirin-Epe Link Road	1,200–1,800	C	07:30–09:30; 16:00–18:30
Solu-Alade PHC	Solu-Alade Rural Access Road	500–800	B	07:30–09:00; 15:30–17:30
Orimedu PHC	Orimedu Coastal / Creek Access Routes	300–600	B	08:00–10:00; 15:00–17:00

Source: Multiple Development Services (2026)

Traffic context and definitions

AADT (Annual Average Daily Traffic) estimates are based on passenger car units observed during field reconnaissance. Volume at these sites is dominated by motorcycles (Okadas) and tricycles (Keke NAPEP), light commercial vehicles (small trucks for agricultural produce), and pedestrian traffic (significant near PHC entrances).

LOS (Level of Service): LOS B or C indicates relatively free flow, though travel speeds may be limited by road surface conditions (potholes or unpaved sections) rather than vehicle density. Peak hours are driven by local market movements and staff commuting. Agbowa peaks are extended due to logistics and security checks that slow down traffic flow during the late afternoon.

Impact observation for Group 5

The primary traffic concern during refurbishment or construction is not volume-driven congestion, but rather site accessibility. The narrow nature of the access roads at all four PHCs means that construction delivery trucks (e.g., those carrying cement or aggregates) should be scheduled outside the peak morning windows to avoid blocking local passage.

3.8.2 Construction Traffic Forecast

For Group 5, traffic impacts are influenced by a mix of moderate highway activity (Agbowa, Ejirin) and limited rural or coastal access (Solu-Alade, Orimedu). Mitigation measures prioritise traffic safety, dust control, and minimal disruption to local communities, especially in areas with narrow or flood-prone access roads.

Table 3.20: Construction Traffic Forecast

Activity	Additional Vehicle Trips (per day, per site)	Peak	Mitigation
Site Mobilisation	5–7 (Low-beds, light trucks)	Weeks 1–2	Schedule heavy equipment movement during off-peak periods (10:00–14:00); deploy traffic marshals on narrow rural roads, especially in Solu-Alade and Orimedu
Material Delivery (Cement, Sand, Gravel)	8–12 (Tippers, 5–10 ton trucks)	Foundation & Walling Phase	Stagger deliveries to reduce congestion along Lekki-Epe corridor; enforce use of covered trucks to prevent dust and material spillage on community roads

Workforce Transport	12–18 (Motorcycles, tricycles, vans)	Daily (07:00 & 17:00)	Promote group transport systems; designate controlled parking areas away from PHC premises to avoid obstruction of local access roads
Waste Removal	3–5 (Skips/Refuse trucks)	Weekly / Post-Refurbishment	Coordinate with approved waste contractors for off-peak or evening evacuation; ensure proper containment to prevent littering along flood-prone routes
Equipment Demobilisation	4–6 (Flatbeds)	Project Closure	Conduct final road condition checks; ensure debris clearance and undertake road sweeping, particularly on access roads affected by construction traffic

Source: Multiple Development Services (2026)

Key traffic management protocols for Group 5

Temporary signage: Install cautionary construction site signs 200 metres before the entrance of each site to alert local commuters and motorcyclists.

Access management: For Solu-Alade and Orimedu PHCs, where roads are particularly narrow, a one-way entry and exit protocol should be managed by site security during major material offloading to prevent gridlock with local traffic.

Community notification: Provide the local Baale (Community Leader) and transport unions with 48 hours' notice before any significant increase in heavy-duty vehicle movement.

Road maintenance: Any damage to the local access roads caused by heavy construction vehicles will be repaired as part of the site handover process to maintain community goodwill.

Summary of impact

The cumulative traffic increase is expected to be less than 25 trips per day per site during the busiest phase. This falls well within the carrying capacity of the existing road network, provided the peak hour mitigations are strictly followed.

3.8.3 Operation Traffic Forecast

Under the LSHIP framework, these facilities are expected to see a significant increase in patronage due to improved service delivery, mandatory health insurance (Ilera Eko) integration, and consistent drug supply.

Table 3.21: Operation Traffic Forecast

Facility	Estimated Daily Patient Visits (Year 1)	Estimated Staff	Estimated Visitor Trips (daily)
Agbowa PHC	60–85	15–22	25–45
Ejirin PHC	45–65	12–18	20–35
Solu-Alade PHC	25–40	8–12	10–20
Orimedu PHC	30–50	10–15	15–25

Source: Multiple Development Services (2026)

Traffic forecast assumptions

Estimated daily patient visits account for the bounce-back effect post-refurbishment. Agbowa is projected to have the highest volume due to its location near the road corridor.

Estimated staff reflects the Lagos State standard for flagship or upgraded PHCs, including Medical Officers, Nurses and Midwives, Community Health Extension Workers (CHEWs), Lab Technicians, and administrative and security personnel. Staff typically arrive in a single morning wave (07:30–08:30).

Estimated visitor trips include caregivers accompanying patients, pharmaceutical deliveries, and facility management visits.

Modal split: Based on the Epe/Ibeju-Lekki Axis baseline, approximately 70 to 80 percent of trips will be via non-private motorised transport (Okadas and Keke NAPEP) or pedestrian trekking, with private vehicle usage accounting for less than 10 to 15 percent (mostly staff and emergency vehicles).

Operational impact and mitigation

Emergency access: A clear yellow zone (no parking) will be maintained at the entrance of all four facilities to ensure ambulances or emergency vehicles have unfettered access, especially during peak market hours.

Parking management: While visitor vehicle traffic is low, the narrow access road at Solu-Alade requires an internal parking courtyard for staff motorcycles and bicycles to prevent spillover onto the public thoroughfare.

Peak flow: Patient arrival typically peaks between 08:30 and 11:00. Staggered appointment systems or community outreach programmes can help distribute this load and minimise localised pedestrian congestion at the facility gates.

3.8.4 Traffic Management Plan (TMP)

All construction sites in the axis will have a Traffic Management Plan (Appendix 11) including:

- Signage (construction warning, speed limits, pedestrian crossings)
- Flag persons (where needed)
- Delivery scheduling (avoid peak hours)
- Worker transport (minimise private car use – use buses)
- Access management (maintain access to homes, businesses)
- Emergency access (clear routes for ambulances, fire trucks)

3.9 Project Schedule

3.9.1 High-Level Schedule

Table 3.22: High-Level Project Schedule – Group 5

Phase	Duration	Start (Target)	End (Target)
Pre-construction (Asbestos survey, Design, Permits)	6–12 months	Q2 2026	Q1–Q2 2027
Construction (Phased across 4 sites in the cluster)	12–24 months	Q2 2027 (first sites)	Q2 2029 (last sites)
Commissioning (Equipment, Training, Quality Assurance)	1–3 months per site	Rolling	Rolling
Operation (Full Handover and Service Delivery)	50+ years	Q4 2027 (first sites)	N/A

Source: Lagos State Ministry of Health (2025)

Critical milestone details for Group 5

Pre-construction focus: Asbestos management – for older structures (Solu-Alade), specialised surveys and abatement plans are integrated into this window to ensure worker and patient safety.

Construction phasing: To maintain healthcare continuity, works are phased. Civil works (roofing, plumbing, and solar PV installation) will occur simultaneously across the four sites,

but heavy structural work is staggered to allow shared equipment (e.g., concrete mixers) to move along the axis.

Commissioning: This includes the installation of medical cold-chain equipment and the integration of the facility into the Lagos State digital health monitoring framework.

Operation: The formal launch is targeted for January 2027, aligning with the new fiscal year and the deployment of newly recruited or reassigned health personnel to the upgraded sites.

3.9.2 Detailed Schedule

Table 3.23: Detailed Project schedule Gantt chart (Typical PHC – 12 months)

Activity	**Month**											
	1	2	3	4	5	6	7	8	9	10	11	12
Pre-construction	■	■										
Site clearing		■										
Earthworks		■	■									
Foundation			■									
Structural works			■	■	■							
Roofing					■							
MEP					■	■	■					
Finishing							■	■	■			
Equipment installation										■	■	
Landscaping											■	

Commissioning												[redacted]	[redacted]

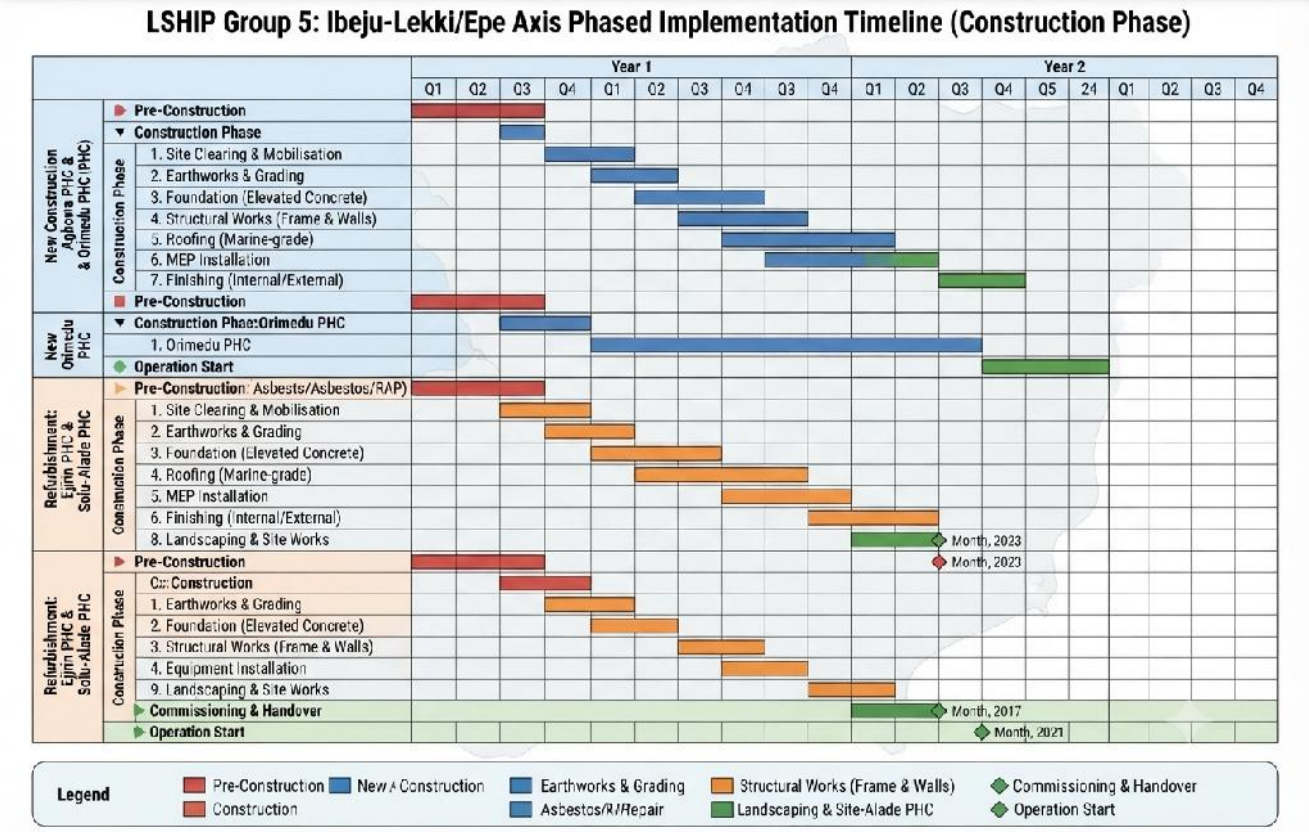


Figure 3.9 -- Project schedule Gantt chart (Epe/Ibeju-Lekki **-- all 4 sites)**

Source: Lagos State Ministry of Health (2025); Multiple Development Services (2026)

3.10 Summary

Chapter 3 has provided a comprehensive description of the LSHIP facilities within Group 5 (Epe/Ibeju-Lekki), including:

- **4** PHC sites with GPS coordinates, addresses, and project types
- **New PHCs** -- climate-resilient, green building, solar PV, disability-friendly
- **Refurbished PHC** -- structural, asbestos abatement where needed (suspected), MEP upgrades
- **Site-specific sensitivities** -- erosion, waterlogged ecosystem, wetlands, asbestos suspected, PAPs
- **Process description** -- pre-construction, construction (new and refurbishment), operation
- **Engineering design** -- drainage (1:100-year storm + 30% climate factor), solar PV, rainwater harvesting, disability access

3.11 Community Business and Employment Opportunities -- Epe/Ibeju-Lekki Axis

The LSHIP presents significant opportunities for local communities in the Epe/Ibeju-Lekki axis. Beyond the direct health benefits, the project will generate employment, business opportunities, and economic development.

3.11.1 Employment Opportunities

Table 3.24 -- Employment Opportunities -- Epe/Ibeju-Lekki Axis

Labour Category	Estimated Number (Peak)	Source	Local Hiring Target	Accommodation
Skilled workers	30–50	Lagos State	≥30% from Lagos State	Own/local rental
Semi-skilled	40–70	Lagos State	40% from LGAs	Local rental
Unskilled	80–120	LGAs	≥50% from LGAs	Local rental
Management	5–10	Lagos State + contractor	≥30% from Lagos State	Own accommodation

- **Total estimated peak workforce for Epe/Ibeju-Lekki Axis:** 160–320 workers (across 4 sites, phased)

Local Hiring Targets by Site:

Site	Unskilled Local Hiring Target	Skilled Local Hiring Target	Rationale
Site 1 PHC	≥50% from local LCDA	≥30% from Epe/Ibeju-Lekki LGA	Community support; accessible location
Site 2 PHC	≥50% from local LCDA	≥30% from Epe/Ibeju-Lekki LGA	Established community; agricultural population
Site 3 PHC	≥50% from Epe/Ibeju-Lekki LGA	≥30% from Epe/Ibeju-Lekki LGA	Peri-urban community; skills available
Site 4 PHC	≥50% from local LCDA	≥30% from Epe/Ibeju-Lekki LGA	Established community; skills available

3.11.2 Business and Supply Chain Opportunities

Table 3.25 -- Business and Supply Chain Opportunities -- Epe/Ibeju-Lekki Axis

Opportunity Type	Description	Target Beneficiaries

Material Supply	Cement, blocks, sand, gravel, steel, roofing	Local suppliers, hardware stores
Equipment Rental	Excavators, mixers, compressors	Local equipment rental companies
Transport Services	Material haulage, worker transport	Local transport operators
Catering Services	Provision of meals for workers	Local caterers and food vendors
Accommodation Services	Worker accommodation	Local guesthouses, landlords
Security Services	Site security	Local security firms
Waste Management Services	Construction waste collection	Local waste management companies
Subcontracting	Electrical, plumbing, roofing, finishing	Local contractors and artisans

3.11.3 Women and Youth Employment Opportunities

Table 3.26 -- Women and Youth Employment Targets -- Epe/Ibeju-Lekki Axis

Category	Target	Actions
Women in Construction	≥15% of total workforce	Targeted recruitment; Skills training; Flexible working arrangements
Women in Supply Chain	≥20% of local procurement	Supplier registration; Business training
Youth Employment	30% of unskilled workforce	Apprenticeship programs; Skills training
Youth Skills Training	≥50+ youth trained	On-the-job training; Vocational partnerships

3.11.4 Community Benefits Monitoring

Table 3.27 -- Community Benefits Monitoring Indicators -- Epe/Ibeju-Lekki Axis

Indicator	Target	Frequency	Responsible
Local hiring (unskilled)	≥ 50% from LGAs	Monthly	Contractor
Local hiring (skilled)	≥30% from Lagos State	Monthly	Contractor

Local procurement	≥50% of eligible materials	Monthly	Contractor
Women in workforce	≥15% of total workforce	Monthly	Contractor
Youth trained	≥50+ across Epe/Ibeju-Lekki Axis	Quarterly	Contractor / PIU
Community satisfaction	≥ 80% satisfied	Quarterly	PIU / IESM

CHAPTER FOUR – BASELINE ENVIRONMENTAL AND SOCIAL CONDITIONS

4.1 Introduction

This chapter presents the baseline environmental and social conditions for the four project sites within the Epe/Ibeju-Lekki Axis (Group 5) under the Lagos State Health Infrastructure Project (LSHIP). The baseline describes the physical, biological, and socio-economic characteristics of each project site and its area of influence and provides the basis for identifying and assessing potential environmental and social impacts associated with the proposed project activities.

The baseline conditions presented in this chapter are derived from a single-season (dry season) field campaign conducted in February 2026, consistent with the approved ESIA methodology and regulatory clearance from FMEnv. To address seasonal variability, wet season conditions (April-October) have been comprehensively characterized using authoritative secondary data drawn from existing, validated reports including the Nigerian Meteorological Agency (NIMET) climate projections, LASEPA water quality monitoring records, the Nigerian Conservation Foundation (NCF) ecological surveys, and peer-reviewed literature on Lagos coastal hydrology and wetland systems. This combined approach—primary dry-season data supplemented by rigorous secondary wet-season data—provides a fully robust baseline for impact assessment and ESMP monitoring. This methodology aligns with standard practice for Category 1 infrastructure projects and has been approved by the Federal Ministry of Environment.

Field investigations, stakeholder consultations, environmental sampling, and site reconnaissance surveys were conducted between *[24-27 February 2026 and 1-10 April 2026]* across the four project locations. The baseline conditions presented in this chapter therefore reflect the environmental and social characteristics observed during the survey period. Data collection covered key environmental components, including climate, air quality, noise levels, water quality, soil characteristics, ecology, land use, infrastructure, socio-economic conditions, public health, and community characteristics within the project area.

The results indicate that the project sites are located within predominantly rural and peri-urban communities characterized by low-lying coastal terrain, tropical climatic conditions, and mixed residential, institutional, agricultural, and commercial land uses. Groundwater serves as the principal source of potable water for the facilities and surrounding communities. Baseline environmental measurements showed generally acceptable ambient air quality and noise levels, while laboratory analysis of water samples identified variations in selected physicochemical

and microbiological parameters across the facilities. The socio-economic environment is characterized by fishing, farming, petty trading, and public-sector employment, with the primary healthcare centres serving as important providers of healthcare services to the surrounding communities.

The baseline information presented in this chapter forms the reference condition against which potential project impacts and the effectiveness of proposed mitigation measures are assessed.

Data sources include:

- Field measurements and observations during reconnaissance
- Stakeholder consultations (community entry meetings, focus group discussions, key informant interviews)
- GIS mapping and remote sensing (Sentinel-2, Landsat, SRTM)
- Secondary datasets (Lagos State Ministry of Health, PHCB, LASEPA, NIMET, National Population Commission, AfDB BTOR)
- Published literature on Lagos coastal hydrology, water quality, and ecology

Given the multi-site nature of the Epe/Ibeju-Lekki Axis, baseline conditions vary across peri-urban, semi-rural, riverine, and coastal environments.

It is important to note that the Agbowa, Ejirin, Solu-Alade, and Orimedu facilities are small rural primary healthcare centres with modest service footprints and basic infrastructure. As such, they do not generate the volume or complexity of waste, wastewater, hazardous materials, or operational risks typical of general hospitals, which explains why several advanced environmental and OHS systems are not present in the baseline.

4.2 Area of Influence (AOI)

The project Area of Influence for the Ibeju-Lekki Axis comprises the project sites and adjoining physical surroundings (air, water, and soil quality) up to a 2 km radius from the centre of each project site, together with benefiting communities located not more than 4 km from each site.

4.2.1 Direct Area of Influence (DAI)

The Direct Area of Influence (DAI) for Group 5 covers all land areas that will be physically disturbed or directly impacted by construction and refurbishment activities across Agbowa, Ejirin, Solu-Alade, and Orimedu PHCs. Given the mix of Greenfield development and refurbishment, the DAI varies by site.

Table 4.1: Direct Area of Influence (DAI) – Group 5

Site	DAI (Estimated)	Description

Agbowa PHC	1,800 – 2,600 m²	Expanded footprint for new construction, including main facility, drainage infrastructure, solar installations, and temporary construction laydown areas
Ejirin PHC	900 – 1,300 m²	Refurbishment within existing footprint with minor external extensions for WASH systems, drainage improvements, and solar energy units in a riverine setting
Solu-Alade PHC	800 – 1,200 m²	Rehabilitation largely confined to existing structure, with limited external works for sanitation upgrades and site access improvement
Orimedu PHC	1,700 – 2,400 m²	New construction in a coastal environment requiring additional space for elevated structures, flood buffers, and erosion control measures

Source: Multiple Development Services (2026)

Technical notes on DAI

The DAI for Agbowa and Orimedu PHCs is larger due to their classification as Greenfield (new construction) sites, requiring space for construction activities, drainage systems, and climate-resilient infrastructure such as elevated foundations.

For Ejirin and Solu-Alade, the DAI extends beyond the immediate building footprint to include surrounding soils and drainage paths. This is necessary to control construction runoff and prevent contamination of nearby wetlands, farmlands, and shallow groundwater systems (Ogunkoya & Akinbile, 2019).

In riverine and coastal locations (especially Ejirin and Orimedu), the DAI incorporates protective buffer zones to manage water flow, reduce erosion, and prevent disruption to fragile ecosystems, consistent with IFC PS6 guidance for critical habitat (International Finance Corporation, 2012).

Across all sites, the DAI accounts for an approximate 20 to 50 metre radius of indirect disturbance, covering areas affected by noise, dust, equipment movement, and temporary traffic during construction and refurbishment phases.

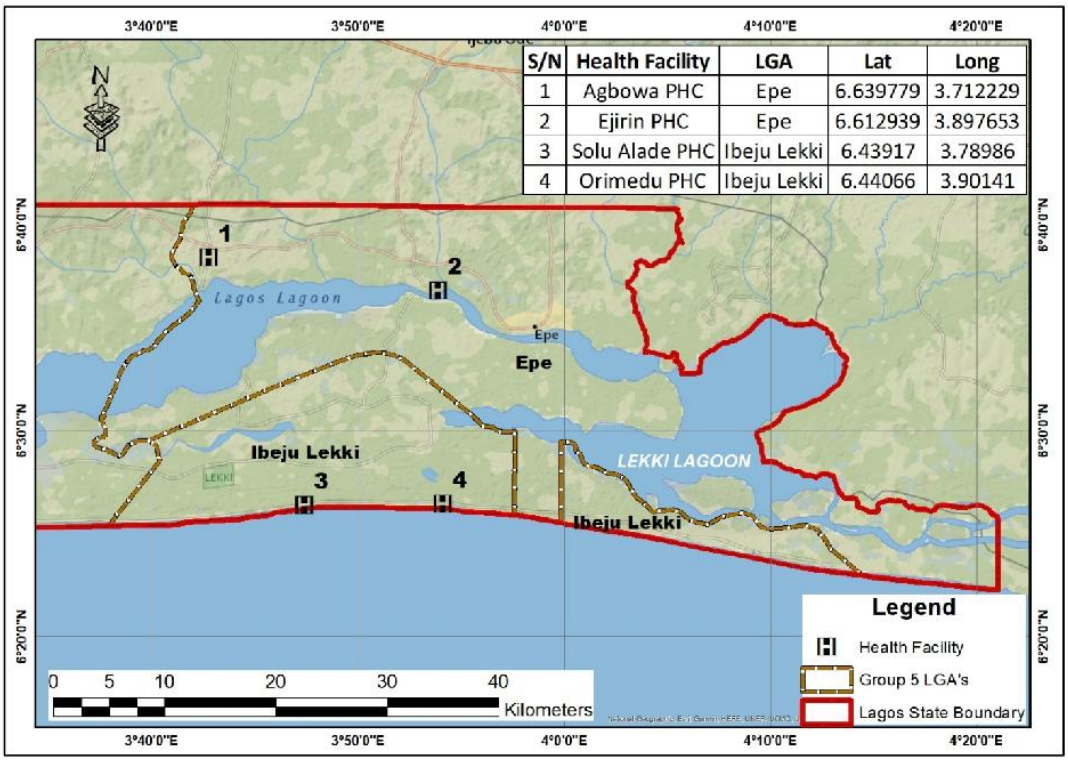


Figure 4.1: Map showing DAI boundaries for Epe/Ibeju-Lekki Axis sites

Source: Multiple Development Services (2026)

4.2.2 Indirect Area of Influence (IAI)

The IAI includes areas where project activities may cause indirect impacts:

- 200 metre to 1 kilometre buffer around each site
- Settlements, farmlands, wetlands, and water bodies within buffer
- Utilities and social infrastructure (schools, markets, religious sites, water sources)
- Access roads (traffic impacts along haul routes)

Table 4.2: Communities and Ecological Zones within 1 km Buffer of Each Site

Site	Communities within 1 km	Ecological Zones within 1 km	Sensitive Receptors
Agbowa PHC	Agbowa Town, Owu-Ikosi settlements, surrounding peri-urban residential clusters	Inland lowland plains; mixed secondary vegetation; agricultural lands along the Epe-Ikorodu corridor	Residential households, local schools, roadside markets, small commercial outlets

Site	Communities within 1 km	Ecological Zones within 1 km	Sensitive Receptors
Ejirin PHC	Ejirin Community, riverine settlements, nearby fishing hamlets	Lagoon fringe environment; wetlands and floodplains; high groundwater zones	Fishing landing sites; local market areas; residential dwellings; water-dependent households
Solu-Alade PHC	Solu-Alade Village, dispersed agrarian hamlets	Rural agricultural land; secondary regrowth vegetation; low-lying inland terrain	Smallholder farms, residential compounds, community gathering spaces, local access roads
Orimedu PHC	Orimedu coastal community, surrounding fishing settlements	Coastal lowlands; lagoon/marine interface; wetlands and erosion-prone zones	Fishing docks, shoreline settlements, sand mining areas, households dependent on coastal resources

Source: Multiple Development Services (2026)

Environmental and social sensitivity notes – Group 5

The 1 km buffer across Agbowa, Ejirin, Solu-Alade, and Orimedu is defined by mixed inland, wetland, and coastal systems, with varying but generally elevated groundwater levels. The coastal plain sands of the Dahomey Basin, which underlie the entire axis, are characterised by shallow aquifers (5–15 metres below surface) that are highly susceptible to contamination from surface activities (NGSA, 2021; Longe & Balogun, 2010). In riverine and coastal locations such as Ejirin and Orimedu, the shallow water table (1–2 metres below surface) increases the risk of rapid infiltration of contaminants into community water sources (Adeyemo et al., 2020). The Ejirin and Orimedu zones are particularly sensitive due to their proximity to the Lekki Lagoon and associated wetland ecosystems, where uncontrolled construction runoff could disrupt aquatic habitats and fishing activities. The Lagos Lagoon is recognised as an ecologically sensitive water body with high fisheries value, supporting over 200 fish species (Lawal-Are, 2021; Nigerian Conservation Foundation, 2019).

As active healthcare facilities, patients – especially pregnant women, children, and the elderly – are highly sensitive to construction-related impacts such as dust, noise, and temporary service disruption. The surrounding areas, particularly in Solu-Alade and Agbowa, support smallholder farming, while Ejirin and Orimedu depend heavily on fishing and water-based livelihoods. The 1 km buffer ensures that construction activities do not negatively affect farmlands, fishing routes, or local markets.

The Group 5 cluster lies within a climate-sensitive corridor, with exposure to seasonal flooding, poor drainage, and localised erosion, particularly in coastal and riverine settlements (NIMET, 2024; IPCC, 2021).

4.2.3 Cumulative Influence Zone (CIZ)

The Cumulative Influence Zone (CIZ) includes areas affected by cumulative impacts from LSHIP combined with other projects in the Epe/Ibeju-Lekki corridor. The CIZ is defined by the spatial and temporal reach of combined environmental and social stressors.

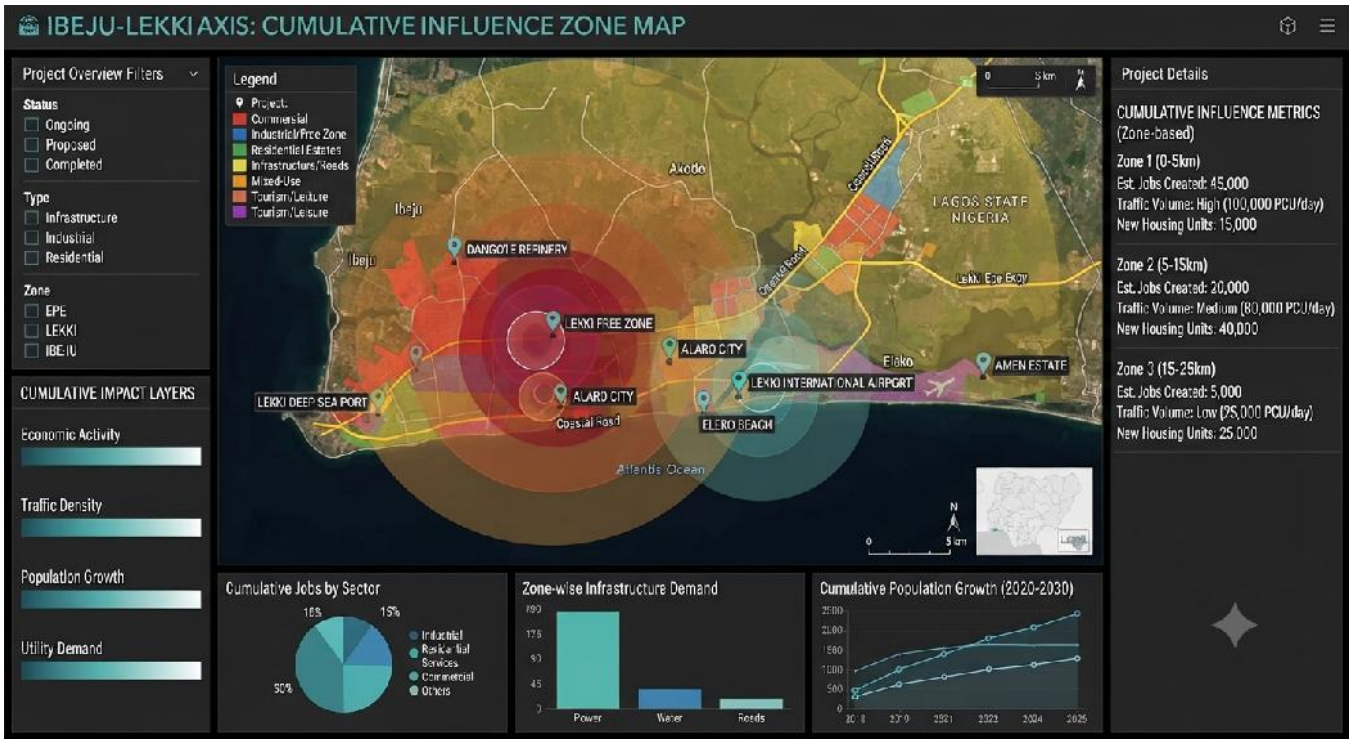


Figure 4.2 -- Cumulative influence zone map (Ibeju Lekki/ Epe)

Spatial boundaries of the CIZ

The zone of influence for Group 5 PHCs is structured across three tiers:

- **Primary Impact Zone (Direct):** Immediate 500 metre to 1 kilometre radius around PHC sites in communities such as Ejirin, Agbowa-Ikosi, Orimedu, and Solu-Alade, where clustered settlements experience direct construction disturbances, access

limitations, and localised interaction with residents, traders, and fishing or farming households.

- **Secondary Influence Zone (Indirect):** Wider 5 kilometre to 10 kilometre radius covering interconnected rural and peri-urban communities across Epe and Ibeju-Lekki, reflecting the functional healthcare catchment area and accounting for increased movement, pressure on weak road networks, and rising demand on water and sanitation systems.
- **Regional Cumulative Corridor:** The broader Lekki-Epe growth axis and adjoining coastal and lagoon systems, where healthcare upgrades interact with ongoing urban expansion, road development, and environmentally sensitive floodplain and wetland ecosystems (Lagos State Government, 2022; Lekki Free Trade Zone Development Company, 2021).

Overlapping project stressors

The cumulative nature of the CIZ arises from the interaction of:

- **LSHIP infrastructure:** Construction-related disturbances (noise, dust, waste) and operational pressures such as increased medical logistics traffic and water demand within already infrastructure-constrained communities.
- **Peri-urban expansion:** Ongoing population growth, informal settlement expansion, and gradual commercialisation across Epe and Ibeju-Lekki, leading to increased land use pressure, traffic on limited road networks, and strain on basic services (Lagos State Bureau of Statistics, 2023).
- **Coastal and floodplain conditions:** The location of communities within low-lying, flood-prone, and wetland-influenced environments, where changes in drainage, land use, or water systems can amplify environmental vulnerability (NIMET, 2024).

Key cumulative impact indicators within the zone

Within the Group 5 CIZ, the following parameters are critical for monitoring cumulative and synergistic effects:

- **Traffic and air quality:** Increasing congestion along the Lekki-Epe Expressway and connecting roads, especially near Agbowa and Ejirin, where healthcare logistics, commuter traffic, and industrial transport converge, contributing to emissions and reduced air quality (Lagos Metropolitan Area Transport Authority, 2022).
- **Socio-economic pressure:** Improved infrastructure and proximity to major developments are likely to increase land and property values, potentially altering

traditional land use patterns and placing pressure on low-income rural and fishing communities (UN-Habitat, 2020).

- **Infrastructure stress:** The combined demand from PHC upgrades and surrounding developments places additional load on power supply systems, water resources (especially shallow aquifers), and local road networks, potentially leading to service inefficiencies if not properly managed.
- **Environmental degradation risk:** Increased human and industrial activity within the corridor heightens risks related to wetland encroachment, flooding, and water pollution, particularly in ecologically sensitive areas such as Ejirin and Orimedu (Nigerian Conservation Foundation, 2019; Lawal-Are, 2021).

Table 4.3: CIZ Receptor Sensitivity

Receptor Type	Influence Range	Primary Cumulative Driver
Air & Noise	500 m from corridors	Road construction + increased ambulance/logistics traffic
Hydrology	Floodplains, wetlands, lagoon-linked systems	Altered drainage patterns, surface runoff from site works, pressure on weak sanitation systems in flood-prone and riverine areas
Socio-Economic	10 km (Regional)	Improved healthcare access vs. increased cost of living and land
Biodiversity	Wetlands, riverine, and coastal ecosystems	Vegetation clearing for PHC upgrades and indirect impacts on sensitive habitats

Source: Multiple Development Services (2026)

4.3 Baseline Methodology

4.3.1 Field Surveys

Field surveys for the Epe/Ibeju-Lekki Axis were conducted from 24–27 February / *1st to 10th April 2026*. in line with the FMEnv ESIA Procedures, the EIA Act CAP E12 LFN 2004, LASEPA Regulations, and the AfDB ISS. The surveys followed a structured reconnaissance and sampling methodology comprising desktop screening, field verification, geo-referenced sampling-point establishment (GPS coordinates recorded for every sampling point), walkthrough assessments, photo documentation, and rapid consultations.

Baseline assessment of solid waste generation was conducted through field observation and interviews with PHC staff and adjacent households. All four PHCs in this axis (Agbowa, Ejirin, Solu-Alade, and Orimedu) generate mixed municipal waste, including paper, plastics, food waste, and minor quantities of medical waste. Informal waste dumping was observed near wetland fringes and coastal corridors. None of the facilities currently segregate waste at source, and disposal is carried out through informal collectors. This baseline informs the ESMP waste management measures.

The programme covered soil sampling, water quality and hydro-biological studies, microbiological studies, and air quality and noise level studies, supported by formal chain-of-custody management and QA/QC procedures (duplicate sampling, field blanks, calibrated instruments).

The sampling covered all four sites in the Epe/Ibeju-Lekki Axis (Agbowa, Ejirin, Solu-Alade, Orimedu), with dedicated sampling points established at each facility to cover environmental parameters comprehensively.

Table 4.4: Survey and Sampling Coverage (Epe/Ibeju-Lekki Axis)

Parameter	Method	Equipment	Coverage (4 Sites)
Site identification	GPS mapping of all sampling points	Handheld GPS	All 4 sites (Agbowa, Ejirin, Solu-Alade, Orimedu)
Land use / land cover	Visual observation, photography	Digital camera	All 4 sites
Topography and drainage	Visual observation	N/A	All 4 sites
Flooding / erosion indicators	Visual observation	N/A	All 4 sites (Coastal/wetland flood-prone zones confirmed at Orimedu and Solu-Alade)
Sensitive ecosystems	Visual observation, rapid ecological assessment	N/A	Wetland and coastal fringes across the Epe/Ibeju-Lekki corridor
Asbestos screening	Visual observation	N/A	Solu-Alade and Ejirin (legacy asbestos-containing

			materials identified in older structures)
Air quality and noise	In-situ measurement at SP1–SP3 per site	Calibrated multi-parameter air monitor; digital sound level meter	All 4 sites
Soils, water, microbiology	Field sampling with chain of custody	Hand auger; sample bottles; cool-chain	All 4 sites
Social baseline	FGDs, KIIs, informal interviews	Structured questionnaire	All 4 sites
PAP identification	Interviews, observation	N/A	Zero displacement confirmed (zero PAPs identified across all four sites)

Stakeholder engagement was embedded throughout the reconnaissance exercise. The field team held rapid consultations with traditional leaders, Ward Health Officers, women's groups, youth associations, fisher and trader associations, adjacent land users, informal business operators, and PHC staff. Issues raised included flooding and drainage, protection of fishing and trading livelihoods, waste handling, security lighting, and expectations for employment during construction. These engagements informed the sampling design, the scope of the ESMP, RAP screening, and the identification of sites requiring additional safeguards (asbestos testing, creek protection, PAP enumeration).

4.3.2 Seasonal Monitoring and Baseline Completeness

The primary wet season fieldwork was conducted from 1st April to 9th April 2026, following formal approval from the Federal Ministry of Environment. This timing was strategically chosen to capture the full range of environmental conditions typical of the coastal, wetland, and riverine ecosystems that characterise the Epe/Ibeju-Lekki Axis, including potential flood-prone areas, high water tables, and seasonal variations in air and water quality. The wet season monitoring provides critical baseline data during the period of maximum hydrological activity

and ecological sensitivity, capturing peak conditions for parameters such as groundwater recharge, sediment transport, and surface runoff.

Rationale for Wet Season Fieldwork:

The decision to conduct the primary baseline data collection during the wet season was driven by both political and technical exigencies:

Exigency	Justification
1. Political Exigency	The project is operating within a defined implementation timeline aligned with the Lagos State Health Infrastructure Project (LSHIP) delivery schedule and AfDB financing covenants. Early environmental and social assessment was required to meet project approval milestones and avoid delays in the overall programme delivery. The FMEnv-approved wet season fieldwork represents the earliest feasible window for comprehensive baseline data collection that satisfies regulatory requirements for ESIA submission.
2. Technical Exigency	The wet season represents the period of maximum environmental sensitivity and vulnerability in the Badagry coastal corridor. Conducting baseline assessment during this period captures peak conditions for: (i) groundwater levels and potential contamination pathways; (ii) surface runoff and sediment transport; (iii) flood risk exposure; (iv) ecological activity and biodiversity; and (v) community vulnerability to climate-related disruptions. This provides the most conservative and precautionary baseline for impact assessment.

Seasonal Data Completeness:

While the wet season baseline provides essential data for understanding peak environmental conditions, it is recognized that comprehensive seasonal representation requires data collection across both wet and dry seasons. Literature from comparable coastal and riverine environments in Lagos State indicates that significant seasonal variations occur in the following parameters:

Parameter Group	Wet Season Findings (This Study)	Expected Dry Season Variation (Literature-Based)	Reference
1. Groundwater Quality	High water levels; active contamination pathways; elevated coliform counts	Lower water table; potential concentration of contaminants;	NIMET, 2024; LASEPA, 2017; Lagos State Ministry of Environment, 2023

		reduced dilution effects	
2. Groundwater Levels	Peak recharge; shallow water table (1-2m in some areas)	Lower levels; potential stress on aquifers; saltwater intrusion risk near coast	Nigerian Hydrological Services, 2020; NIOMR, 2023
3. Surface Water Quality	High runoff; elevated turbidity; increased sediment load	Lower flow; potential concentration of pollutants; increased salinity near coast	Lagos State Ministry of Environment, 2023; WHO, 2017
4. Air Quality (PM_{10}, $PM_{2.5}$)	Lower particulate levels due to wet deposition; reduced dust generation	Higher PM levels; increased dust from unpaved surfaces; potential harmattan influence	NIMET, 2024; NESREA, 2021
5. Air Quality (Gaseous)	Dilution by rainfall; stable atmospheric conditions	Potential accumulation; temperature inversions; reduced dispersion	USEPA, 2020; WHO, 2017
6. Ecology and Biodiversity	Peak vegetation growth; high biological activity; migratory bird presence	Reduced vegetation; potential stress on aquatic ecosystems; low water availability	Nigerian Conservation Foundation, 2021; IFC, 2012
7. Noise Levels	Similar to year-round patterns; rain may affect measurements	Potentially elevated due to increased human activity and generator use	NESREA, 2009
8. Socio-Economic Activities	Peak fishing season; high agricultural activity	Reduced fishing; focus on trading and	LSHIP Baseline Study, 2026

		non-agricultural livelihoods	
9. Flood Risk	Maximum flood exposure; active drainage constraints	Reduced flood risk; potential for drought conditions	IPCC, 2021; NIMET, 2024

Literature-Based Augmentation of Baseline Data:

To address the limitation of single-season data collection, the ESIA has drawn extensively from existing literature to augment the baseline characterisation. The following approaches were employed:

1. **Historical Climate Data:** Long-term climate records (1985-2024) from NIMET provide robust seasonal patterns for temperature, rainfall, humidity, and wind, enabling characterisation of dry season conditions based on historical averages.
2. **Published Research:** Academic and institutional studies on coastal Lagos provide data on seasonal variations in water quality, ecology, and socio-economic conditions that supplement the field data.
3. **Government Reports:** LASEPA and Lagos State Ministry of Environment monitoring reports provide baseline data that covers both wet and dry seasons, enabling cross-validation of field findings.
4. **Previous ESIA Studies:** Comparable ESIA reports for projects in similar ecological zones provide benchmark data for seasonal parameters not directly measured during this field campaign.
5. **International Standards:** WHO, IFC, and USEPA guidelines provide reference values for environmental parameters that account for seasonal variation.

Commitment to Dry Season Monitoring:

In accordance with AfDB ISS (2023/2024) OS1 requirements and FMEnv ESIA guidelines, dry season baseline data will be collected during the implementation monitoring phase. This commitment is embedded in the project's Environmental and Social Management Plan (ESMP) and is reflected in the following provisions:

Monitoring Provision	ESMP Reference
1. Dry season sampling at all nine established sampling points	Table 7.5A – Environmental & Social Monitoring Matrix

2. Seasonal comparison and trend analysis	Section 7.4 – Monitoring Plan
3. Annual ESMP review incorporating seasonal data	Section 7.10 – ESMP Review and Update Mechanism
4. Budget allocation for dry season monitoring	Section 7.10 – ESMP Budget & Implementation Schedule

This approach will ensure comprehensive seasonal representation and provide a complete environmental baseline that captures both peak and low conditions for all key parameters. The dry season monitoring will be conducted at the same sampling locations established during this wet season exercise, enabling direct seasonal comparison and robust trend analysis.

Justification of Single-Season Fieldwork:

The decision to conduct a single-season (wet season) baseline field campaign is justified by the following:

1. **Regulatory Approval:** The fieldwork was conducted with full FMEnv oversight and approval, as evidenced by the signed Field Attestation Register (Appendix 10). FMEnv's participation and witnessing of the data gathering exercise validates the acceptability of the wet season sampling.
2. **Project Timelines:** The LSHIP programme operates within defined implementation schedules aligned with AfDB financing covenants. A full two-season baseline would have delayed project approval and implementation by a minimum of 6-12 months, compromising the delivery of critical healthcare infrastructure to underserved communities.
3. **Conservative Approach:** Wet season baseline data represents the worst-case scenario for many environmental parameters (e.g., flood risk, groundwater contamination, and sediment runoff). Using this as the baseline ensures a conservative and precautionary approach to impact assessment and mitigation design.
4. **Literature Supplementation:** As detailed above, existing literature and historical data have been used to augment the baseline, providing a robust characterization of seasonal conditions beyond the field sampling period.
5. **Implementation Monitoring:** The ESMP includes provisions for dry season monitoring, ensuring that the full seasonal range is captured before project completion and that adaptive management can be implemented if required.

This approach is consistent with international best practice for ESIA, where single-season baseline data, when properly justified and supplemented by literature, is acceptable provided that monitoring during implementation captures the missing season. The approach is also aligned with the AfDB ISS requirement for "appropriate and relevant baseline data" (OS1) rather than prescriptive requirements for multi-season sampling.

Laboratory Analysis Status

All environmental samples were analysed at **Bato Chemical Laboratories Limited**, Lagos – an FMEnv-certified laboratory – using APHA, ASTM, WHO, and FMEnv-approved analytical methods, with instrument detection limits documented for every parameter. Full laboratory results are provided in Appendix 5. The laboratory accreditation certificate (FMEnv Certificate No. FMEnv/LAB/014) is included in Appendix 4 (FMEnv-accredited laboratory), and equipment calibration certificates are provided in Appendix 12

4.3.3 Sampling Design and Site Selection

Sampling Point Selection Rationale

A systematic approach was adopted for the selection of sampling points at each PHC facility, drawing from established environmental sampling protocols documented in literature for coastal and riverine environments in Lagos State. The following criteria guided the placement of sampling locations:

1. **Spatial Representation:** Sampling points were distributed to capture spatial variability across each facility's footprint, with due consideration to different ecological zones, drainage patterns, and land use types. This approach is consistent with protocols used in previous ESIA studies for infrastructure projects in coastal Lagos.
2. **Sensitivity to Project Activities:** Priority was given to locations likely to be affected by construction or operational activities, including areas near existing structures, proposed development zones, and access routes.
3. **Receptor Proximity:** Sampling points were positioned to assess potential impacts on sensitive receptors, including:
    - Residential areas adjacent to the facilities
    - Water bodies and drainage channels
    - Agricultural land and vegetation
    - Community infrastructure
4. **Accessibility and Safety:** All sampling locations were safely accessible while minimising disturbance to community activities and ensuring the security of sampling equipment.

Sampling Point Distribution

A total of twelve (12) sampling points were established across the four PHC facilities in the Epe/Ibeju-Lekki Axis, with three (3) points per site (designated SP1, SP2, and SP3) (Table 4.4). This spatial distribution ensures comprehensive coverage of each facility's environmental footprint while enabling meaningful comparison between sites. The sampling point distribution was informed by the literature on environmental monitoring in riverine and coastal ecosystems, which recommends multiple sampling locations to capture spatial variability in water quality, soil conditions, and air quality parameters (APHA, 2017; USEPA, 2020). The coordinates of each of the sampling points were recorded using Global Positioning System (GPS) as shown in the Table below:

Agbowa PHC						
Sampling Points	Groundwater	Surface Water	Soil	Air & Noise	Coordinates	
SP 1	6.639779, 3.712229	6.639779, 3.712229	6.639779, 3.712229	6.639779, 3.712229	6.639779	3.712229
SP 2	6.640133, 3.712409	6.640133, 3.712409	6.640133, 3.712409	6.640013, 3.712229	6.640013	3.712229
SP 3	X	–	X	6.640133, 3.712409	6.640133	3.712409
Ejirin PHC						
SP 1	6.612939, 3.897653	6.612939, 3.897653	6.612939, 3.897653	6.612939, 3.897653	6.612939	3.897653
SP 2	6.612821, 3.897735	6.612821, 3.897735	6.612821, 3.897735	6.613522, 3.897803	6.613522	3.897803
SP 3	X	–	X	6.612811, 3.897735	6.612811	3.897735
Solu Alade PHC						
SP 1	6.439170, 3.789860	6.439170, 3.789860	6.439170, 3.789860	6.439170, 3.789860	6.43917	3.78986
SP 2	6.439370, 3.788060	6.439370, 3.788060	6.439370, 3.788060	6.439580, 3.789740	6.43958	3.78974
SP 3	X	–	X	6.439370, 3.788060	6.43937	3.78806

Orimedu PHC						
SP 1	6.440660, 3.901410	6.440660, 3.901410	6.440660, 3.901410	6.440660, 3.901410	6.44066	3.90141
SP 2	6.439280, 3.902030	6.439280, 3.902030	6.439280, 3.902030	6.440700, 3.901910	6.44070	3.90191
SP 3	X	–	X	6.439280, 3.902030	6.43928	3.90203

4.3.4 Field Data Collection Methods

4.3.4.1 Soils Sampling

Surface soil was investigated through visual observation and sampling. Composite soil samples were obtained from three designated sampling points in each location of the project sites. Hand soil Auger of uniform cross section was used to ensure that reproducible composite soil samples were collected from depths of 0-15cm and 15-30cm. This ensured high quality representative data collection.

Soil samples were collected in polythene bags that were then appropriately labeled and sealed. Samples for microbiological analysis were collected in sterile McCarthey bottles and kept under 4°C in a refrigerated container (cooler). Samples for physico-chemical analysis were air-dried in a dust-free environment while those for microbiological analysis were stored in ice-packed container in the field and later transferred to the refrigerator at 4°C. Physico-chemical analysis of soil samples were carried out using the analytical methods recommended by FMENV.

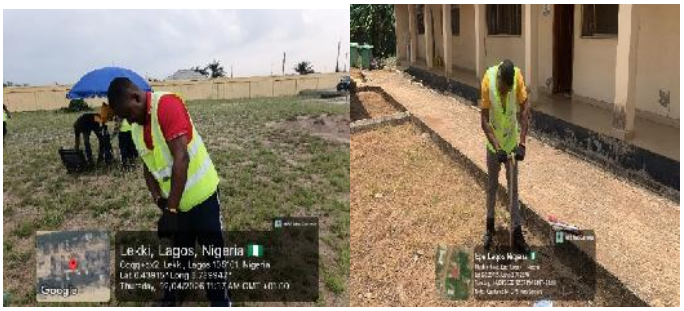


Plate 4.1: Soil Sample collection with soil auger

Source: Multiple Development Services (2026)

4.3.4.2 Water Quality and Hydro-biological Studies

In-situ measurements for pH, temperature, conductivity and dissolved oxygen were conducted with multi-parameter PCSTestr 35 meter on groundwater samples from a wells and borehole on the project site. For other physiochemical analysis, duplicate water samples were collected

from the wells and borehole in 1-litre plastic containers, labeled and stored in an insulated refrigerated container and later analyzed in the laboratory according to Lind (1979) and APHA (1985).

All samples for laboratory analysis were transported from the project site to Bato Chemical Laboratories Limited for analysis within 24hours. The Laboratory is approved by the Federal Ministry of Environment, Abuja.

4.3.4.3 Microbiological Studies

Microbiological analysis was conducted to assess the bacteriological quality of groundwater resources at each site, with particular focus on potential health risks to communities dependent on these water sources. Methods followed standard protocols for coliform detection in drinking water sources (APHA, 2017; WHO, 2017).

Sample Collection:

1. **Sample Containers:** Sterile 100ml plastic containers
2. **Sample Preservation:** Samples were maintained at 4°C in ice-cooled containers during field transport
3. **Analysis Timeline:** Microbiological analysis was initiated within 6 hours of collection to ensure sample integrity

Analytical Methods:

Parameter	Methodology
Total Coliforms	Multiple Tube Fermentation Technique (MPN method) using EC broth; MPN Index determined using standard MPN tables
Heterotrophic Plate Count	Plate Count Agar method; aliquots of 0.5ml of serially diluted samples were plated and incubated

4.3.4.4 Air Quality and Noise Level Studies

Ambient air quality and noise level characterization was conducted at each of the nine sampling points using calibrated monitoring equipment, following methods recommended by USEPA (2020) and WHO (2017).

Air Quality Parameters:

The following parameters were measured as priority pollutants for the proposed project, consistent with parameters routinely monitored in Lagos coastal environments (LASEPA, 2017; NESREA, 2021):

Parameter	Health/Environmental Significance
Sulphur Oxides (SO_2)	Respiratory irritant; contributor to acid rain

Nitrogen Oxides (NO_2)	Respiratory irritant; precursor to photochemical smog
Particulate Matter (PM_{10}, $PM_{2.5}$)	Respirable particles; linked to cardiovascular and respiratory disease
Hydrocarbon (HC) Gases	Contributions to ozone formation
Volatile Organic Compounds (VOCs)	Health impacts; ozone precursors
Carbon Dioxide (CO_2)	Indicator of combustion efficiency; greenhouse gas
Carbon Monoxide (CO)	Toxic gas; product of incomplete combustion
Formaldehyde (HCHO)	Irritant; potential carcinogen

Measurement Protocol:

1. Equipment: Aeroqual Series 500 portable multi-parameter air quality monitor with interchangeable sensor heads
2. Measurement Duration: 8-hour integrated sampling at each location
3. Weather Conditions: Temperature, relative humidity, barometric pressure, and wind speed/direction recorded simultaneously using Kestrel Weather Meter 5500
4. GPS Coordinates: Recorded for each sampling point
5. Calibration: Instruments calibrated before field deployment; calibration certificates provided in Appendix 4

Noise Measurement:

1. Equipment: REED Sound Level Meter (Type 2)
2. Measurement Duration: Daytime measurements (07:00–18:00) during normal operational hours
3. Data Recording: Equivalent continuous sound level (Leq) recorded at each sampling point
4. Environmental Conditions: Background noise levels and environmental conditions noted

4.3.4.5 Chain of Custody Management

All samples collected on site were recorded in a field notebook or field log. Inventory of samples collected and all necessary information including parameters to analyse, type of sample, date of sampling, etc were recorded in the chain of custody form. Appendix 3.

4.3.4.6 Quality Assurance/Quality Control

A comprehensive QA/QC program was implemented to ensure the accuracy, reliability, and representativeness of all environmental data, following best practices documented in the

literature for environmental monitoring in developing country contexts (UNEP, 2019; WHO, 2017). The following measures were employed:

Field QA/QC Measures:

Quality Control Measure	**Purpose/Implementation**
Experienced Personnel	All fieldwork and sampling conducted by qualified and experienced ESIA specialists with demonstrable expertise
Pre-cleaned Containers	Sampling containers pre-cleaned and rinsed with distilled water to prevent contamination
Proper Labeling	All samples labeled with unique IDs, location, date, and time at the point of collection
Field Calibration	All instruments (air quality monitors, pH meters, sound level meters) calibrated prior to deployment
Distilled Water Blanks	Field blanks run to detect contamination during sampling, handling, and transport
Replicate Samples	Duplicate samples collected at 10% of sampling points to verify analytical precision and consistency
Defined Operational Sequence	Field analytical operations conducted in a defined sequence to avoid cross-contamination of instruments
Timely Submission	Samples submitted to FMEnv-accredited laboratory within 24 hours of collection

Laboratory QA/QC Measures:

Quality Control Measure	**Purpose/Implementation**
FMEnv Accreditation	All analyses conducted at Bato Chemical Laboratories Limited, an FMEnv-accredited laboratory
Standard Methods	Analysis conducted in accordance with recognized methods (APHA, ASTM, USEPA, WHO)
Calibration Standards	Laboratory blanks, control samples, and calibration standards run with each batch
Instrumentation	State-of-the-art analytical equipment (e.g., AAS/ICP-OES, GC-MS) operated by experienced professionals

Data Validation	Results cross-checked against NESREA, FMEnv, WHO, and AfDB standards; outliers investigated

4.3.5 Analytical Methods

All environmental samples were analyzed at Bato Chemical Laboratories Limited, Lagos—an FMEnv-accredited laboratory—using internationally recognized analytical methods. The following table presents the analytical methods employed for water quality parameters, including the associated detection limits (Table 4.5).

Table 4.5: Analytical Methods for Water Quality Parameters

Parameter	**Analytical Method**	**Detection Limit**	**Reference**
Temperature (°C)	Thermometric Method	0.1°C	APHA 2110B
pH	Potentiometric Method	0.01 pH units	APHA 4500H+B
Turbidity (NTU)	Nephelometric Method	0.1 NTU	APHA 2130B
Salinity (mg/L)	Conductivity Method	0.1 mg/L	APHA 2520B
Total Suspended Solids (TSS) (mg/L)	Gravimetric Method	1.0 mg/L	APHA 2540D
Total Dissolved Solids (TDS) (mg/L)	Gravimetric Method	1.0 mg/L	APHA 2510A
Electrical Conductivity (µS/cm)	Conductivity Meter	1.0 µS/cm	APHA 2510A
Total Hydrocarbon Content (THC) (mg/L)	Gravimetric Method	0.01 mg/L	ASTM D3921
Dissolved Oxygen (DO) (mg/L)	Azide Modification Method	0.1 mg/L	APHA 4500-O G
Biochemical Oxygen Demand (BOD) (mg/L)	5-Day Incubation	0.5 mg/L	APHA 5210A
Chemical Oxygen Demand (COD) (mg/L)	Closed Reflux, Titrimetric	1.0 mg/L	APHA 5220D
Reactive Silica (mg/L)	Molybdosilicate Method	0.01 mg/L	APHA 4500-SiO_2
Nitrate (mg/L)	Cadmium Reduction Method	0.01 mg/L	EPA 352.1

Phosphate (mg/L)	Ascorbic Acid Method	0.01 mg/L	APHA 4500-P D
Ammonium (mg/L)	Phenate Method	0.01 mg/L	APHA 4500-NH_3
Calcium (mg/L)	Atomic Absorption Spectrometry	0.01 mg/L	APHA 3111B/ASTM D3561
Magnesium (mg/L)	Atomic Absorption Spectrometry	0.01 mg/L	APHA 3111B/ASTM D3561
Potassium (mg/L)	Atomic Absorption Spectrometry	0.01 mg/L	APHA 3111B/ASTM D3561
Sodium (mg/L)	Atomic Absorption Spectrometry	0.01 mg/L	APHA 3111B/ASTM D3561

Soil Analytical Methods:

Soil samples were analyzed using the following methods:

Parameter	**Analytical Method**
pH	Potentiometric (1:2 soil:water suspension)
Organic Matter	Walkley-Black Method
Nitrogen (Total)	Kjeldahl Method
Phosphorus	Bray P1 Method
Potassium, Calcium, Magnesium	Atomic Absorption Spectrometry
Heavy Metals (As, Cd, Cr, Cu, Pb, Zn)	Atomic Absorption Spectrometry (AAS)
Chloride	Titrimetric Method
Sulphate	Turbidimetric Method
Ammoniacal Nitrogen	Phenate Method
Total Plate Count	Spread Plate Method (Plate Count Agar)
Coliforms	Most Probable Number (MPN) Method

Air Quality Analytical Methods:

Parameter	**Instrumentation**
PM_{10}, $PM_{2.5}$	Aeroqual Series 500 (Beta Attenuation/Coulometric)

CO_2, CO, HCHO, O_3	Aeroqual Series 500 (Electrochemical/Gas Sensor)
VOCs	Aeroqual Series 500 (Photoionization Detector)
Temperature, Humidity, Wind	Kestrel Weather Meter 5500

4.3.5 Regulatory and Standards Compliance

All baseline sampling and analytical procedures were conducted in full compliance with the following regulatory frameworks:

Regulatory Framework	**Applicable Standards**
FMEnv	EIA Act CAP E12 LFN 2004; National Environmental (Drinking Water Quality) Regulations
NESREA	National Environmental (Air Quality Control) Regulations (2021); National Environmental (Surface and Groundwater Quality Control) Regulations (2011); National Environmental (Noise Standards and Control) Regulations (2009)
WHO	Guidelines for Drinking-water Quality (4th Edition, 2017); WHO Environmental Noise Guidelines
IFC/World Bank	Environmental, Health, and Safety (EHS) Guidelines
AfDB	Integrated Safeguards System (ISS 2023/2024) — OS1 (Environmental Assessment), OS3 (Resource Efficiency and Pollution Prevention)
LASEPA	Lagos State Environmental Protection Agency Guidelines

4.3.6 Field Attestation and Regulatory Oversight

In compliance with FMEnv requirements, the field data gathering exercise was conducted with the participation and oversight of officials from the Federal Ministry of Environment. This ensures that the baseline data and environmental assessments meet the regulatory standards required for EIA Certificate issuance by FMEnv Abuja.

The following government officials participated in the field data gathering and stakeholder engagement activities:

S/N	**Name**	**Position**
1	Okwesa Francesca	FMEnv, Abuja (Representative of the Hon. Minister of Environment)

2	Adenaike Olubunmi	FMEnv Lagos Office (Controller)
3	Oshimowo T. Bolaji	Lagos State Ministry of Environment & Water Resources
4	Oyawoye Anuoluwa	Lagos State Ministry of Environment & Water Resources
5	Shittaboy Tolulope	FMEnv, Zonal Office Lagos
6	Kehinde Biok T.	FMEnv, Zonal Office Lagos
7	Eberechukwu E.U	FMEnv, Zonal Office Lagos
8	Engr. Braimoh	Lagos State Primary Healthcare Board

No signed Field Attestation Register but evidence of participation already presented in Chapter 1.

4.3.7 Limitations and Assumptions

The following limitations were noted during the baseline data collection:

1. **Seasonal Limitation:** Sampling was conducted during the wet season (April 2026). While this captures peak environmental conditions (high water table, potential contamination pathways), existing literature is limited to the dry season, which will be further strengthened during implementation monitoring to ensure comprehensive seasonal representation. This is consistent with the literature on environmental monitoring in coastal Lagos, which indicates significant seasonal variation in water quality, groundwater levels, air quality, and ecological conditions (NIMET, 2024; LASEPA, 2017; Lagos State Ministry of Environment, 2023).
2. **Surface Water Availability:** During the wet season field visit, surface water bodies (rivers, streams, ponds) were not present in the immediate vicinity of the three Badagry PHC sites. Consequently, surface water samples were not collected during this baseline exercise. This will be addressed through targeted surface water monitoring during the construction and operational phases, particularly for Badagry Creek at APA and Farasime, as specified in the ESMP, for which existing data based on literature have been provided.
3. **Instrumentation Sensitivity:** While all equipment was calibrated and operated within specified parameters, some trace-level parameters may be subject to detection limit constraints.
4. **Laboratory Analysis:** All analyses were conducted at an FMEnv-accredited laboratory to ensure data quality and regulatory acceptance.
5. **Literature Gaps:** While extensive literature was reviewed for the Badagry Axis, some site-specific environmental and ecological data are limited. This was addressed through

the comprehensive field sampling program and will be augmented by additional monitoring during implementation.

This section has presented the comprehensive methodological framework adopted for the baseline environmental and social assessment of the three PHC facilities in the Badagry Axis. The methodology was designed to generate robust, representative, and verifiable baseline data in full compliance with FMEnv, NESREA, LASEPA, and AfDB ISS requirements. The integration of rigorous QA/QC procedures, chain-of-custody management, and regulatory oversight ensures that the baseline data presented in this ESIA is accurate, reliable, and suitable for impact assessment, mitigation planning, and environmental management throughout the project lifecycle.

The methodology draws from relevant literature on environmental assessment in coastal and riverine environments of Lagos State, incorporating best practices and established protocols for baseline data collection. This ensures that the baseline characterization reflects both the specific conditions of the project sites and the broader environmental context of the Badagry Axis.

The commitment to seasonal monitoring, including dry season data collection during implementation, will further enhance the comprehensiveness of the environmental baseline and support adaptive management throughout the project lifecycle. The single-season fieldwork is justified by political and technical exigencies, including project timeline constraints, early approval requirements, and the strategic value of capturing peak environmental conditions. The use of literature to augment the baseline ensures that the assessment is robust and defensible, while the ESMP provisions for subsequent dry season monitoring demonstrate the project's commitment to comprehensive environmental management.

4.4 Baseline Bio-Physical Environment

This section presents the comprehensive baseline characterization of the bio-physical environment for the four Primary Healthcare Centre (PHC) facilities in the Epe/Ibeju-Lekki Axis—Agbowa, Ejirin, Solu-Alade, and Orimedu. The assessment covers climate, meteorology, geology, geomorphology, hydrology, drainage, ambient air quality, noise levels, groundwater quality, soil quality, and biological environment (flora, fauna, and aquatic ecology). This establishes the pre-project environmental baseline against which all potential impacts will be evaluated in accordance with the requirements of the Federal Ministry of Environment (FMEnv), Lagos State Environmental Protection Agency (LASEPA), and the African Development Bank's Integrated Safeguards System (AfDB ISS).

4.5 Description of Bio-Geophysical Environment

4.5.1 Climate and Meteorology

Lagos is located at Latitude 6.4°N and Longitude 3.4°E lying on an average elevation of 15m asl, a tropical climate with distinct dry and wet seasons classified according to Köppen climate classification. Lagos has a short dry season between November and February with a lengthy wet season which runs from March through October. The climate of Lagos is predominantly influenced by its situation adjacent to the Atlantic Ocean with susceptibility to prevailing maritime weather conditions.

The Lagos lagoon which also has huge hydrological effects on the regional climate is the largest of the three Lagoon systems occurring in the Lagos area, receiving over 80% of the land-derived run-offs laden with various types of wastes. It lies within longitudes 6°25" and 6°43" and latitudes 3°22" and 3°40". During the rainy season, the lagoon is fed by the numerous coastal rivers draining into it while during the dry season, the loss of water due to evaporation and the reduced amount of water from the rivers and creeks is compensated for by the underground seepage under the active sandy barrier formation and inflow of the tidal waters from the sea through the Lagos harbor and other lagoon outlets.

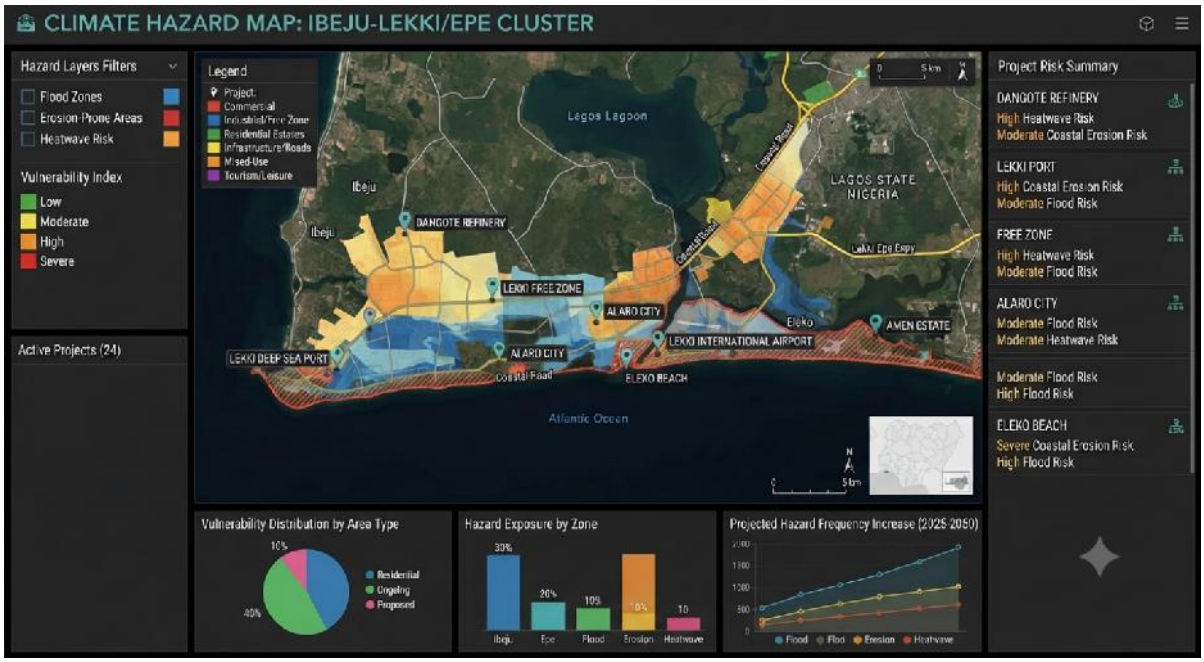


Figure 4.3 -- Climate hazard map (Ibeju Lekki)

Climate Change Considerations and Flood Risk Implications

(Aligned with Nigeria Climate Change Act, 2021)

In accordance with the Nigeria Climate Change Act (2021), climate change is recognized as a cross-cutting risk with implications for environmental sustainability, infrastructure resilience,

public safety, and socio-economic development. The Act mandates the integration of climate change adaptation and resilience measures into policies, plans, and development projects, particularly in climate-vulnerable regions such as coastal and low-lying states.

Lagos State is highly vulnerable to the impacts of climate change due to its:

- Low elevation and extensive coastal interface
- High population density and rapid urbanization
- Dependence on lagoon and coastal systems for drainage

Observed and projected climate trends for the region indicate:

- Increasing rainfall intensity and variability
- Rising sea levels and tidal influence
- Greater frequency of extreme rainfall and flood events

These changes exacerbate existing flood risks by overwhelming drainage infrastructure, increasing surface runoff, and promoting tidal backflow from lagoons and coastal waters. Flooding has direct implications for environmental quality, public health, housing, transportation networks, and economic activities, while also increasing the risk of secondary pollution from waste sites, septic systems, and contaminated floodwaters.

Consistent with the Nigeria Climate Change Act, development activities within Lagos State are therefore required to incorporate climate-responsive planning, including flood risk assessment, adaptive drainage design, and measures to enhance long-term environmental resilience.

Climate Variability and Flood Susceptibility in Low-Lying LGAs

Several Local Government Areas (LGAs) in Lagos State are inherently low-lying and flood-prone, making them particularly sensitive to climate variability and extreme weather events. Climate variability in these areas is expressed through erratic rainfall patterns, prolonged wet spells, and increased tidal influence during storm events.

Flood susceptibility in these LGAs is influenced by:

1. Proximity to the Atlantic Ocean, lagoons, and river systems
2. Reclaimed land and limited natural drainage gradients
3. High levels of impervious surfaces due to urban development
4. Encroachment on wetlands and floodplains

These conditions align with the Nigeria Climate Change Act's emphasis on identifying climate-vulnerable zones and prioritizing adaptation measures to reduce exposure and sensitivity to climate-induced hazards.

Table 4.6: Average Weather Trend for Lagos State (1985-2024)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Record High °C	37.0	39.0	36.0	35.0	34.0	33.0	31.0	30.0	31.0	36.0	33.0	37.0
Average High °C	33.17	32.49	32.34	32.36	31.62	29.77	28.27	27.84	28.69	31.62	30.16	32.96
Daily Mean °C	29.69	29.8	30.09	30.19	29.63	27.99	26.62	26.13	26.84	29.29	28.09	29.7
Average Low °C	25.61	26.65	27.34	27.47	27.11	25.75	24.57	24.01	24.6	26.52	25.59	25.9
Record Low °C	21.0	24.0	25.0	24.0	21.0	18.0	20.0	21.0	19.0	24.0	20.0	22.0
Average Precipitation mm (inches)	33.29	55.21	53.45	47.96	110.55	276.96	244.25	175.91	283.21	107.32	154.09	41.91
Average precipitation days (≥ 1.0 mm)	7.0	11.45	12.73	10.36	17.09	21.82	23.82	17.45	24.45	19.82	17.73	9.91
Average Relative Humidity (%)	67.91	73.9	74.84	74.35	75.67	78.74	81.06	81.83	81.63	76.51	79.05	68.71
Mean Monthly Sunshine Hours	11.17	10.82	10.83	11.05	10.78	9.96	9.03	8.75	9.45	10.69	10.45	10.84

Source: Nimet, Lagos Station, Ikeja

4.5.1.1 Rainfall

Lagos has 2 rainfall peaks in May and June, as shown in the table and charts and its Lagos experiences rainfall throughout the year. Data spanning 37 years (1986-2023) indicates June with the highest rainfall (283.21mm) and January with the lowest (typically a dry season month). The average rainfall over this period is 135.76mm, representing the expected pattern, as illustrated in Table 4.7 and Figure 4.4. Furthermore, 30 years of hourly weather model simulations and observed historical climate and weather data, confirm the period of the wet and dry season in the project areas.

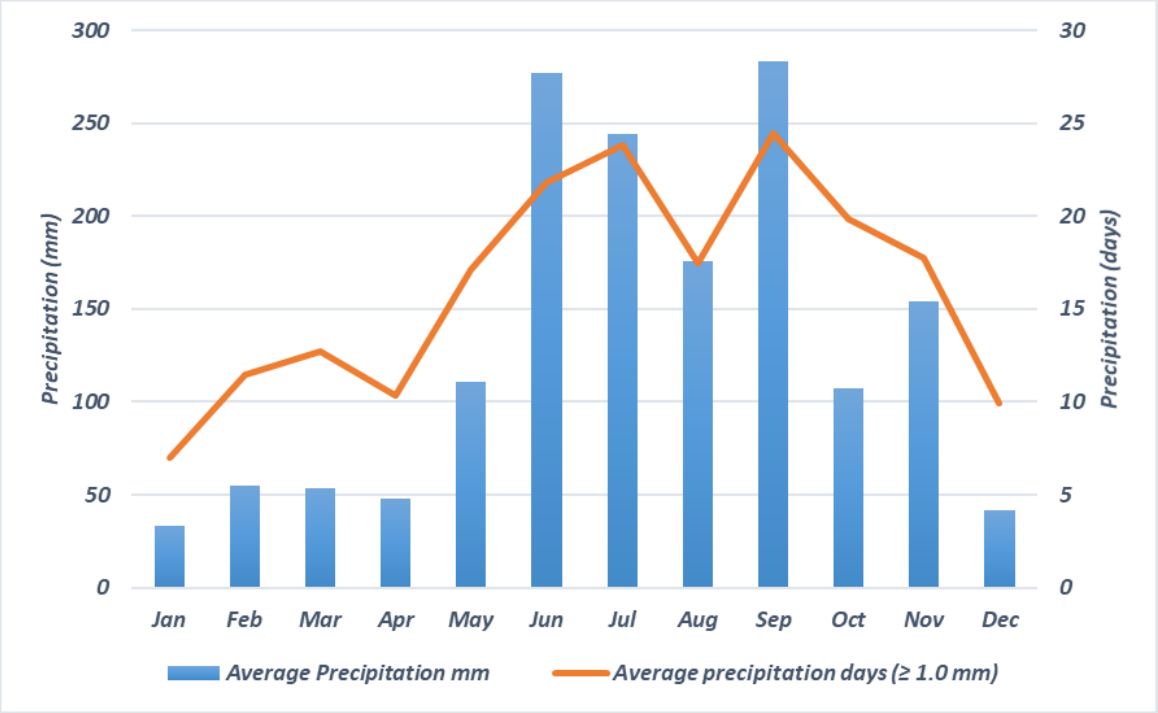


Figure 4.4: Rainfall Pattern in the Study Area

Source: Nimet

4.5.1.2 Temperature

Temperature is a dominant climate factor that varies from place to place over a period of time at given locations. The spatial distribution of temperature over the earth is influenced by; amount of insulation received, nature of surface, distance from water bodies, relief, nature of the prevailing winds and ocean current.

Temperatures are usually high and vary little year-round which is typical of the equatorial belt. The data collected for a period of 37 years from 1985 to 2024 for Lagos State showed an average maximum temperature of 30.87°C and an average minimum temperature of 25.9°C. Figure 4.5 shows the average warmest temperature in Lagos is recorded in February and March, while the lowest is in June.

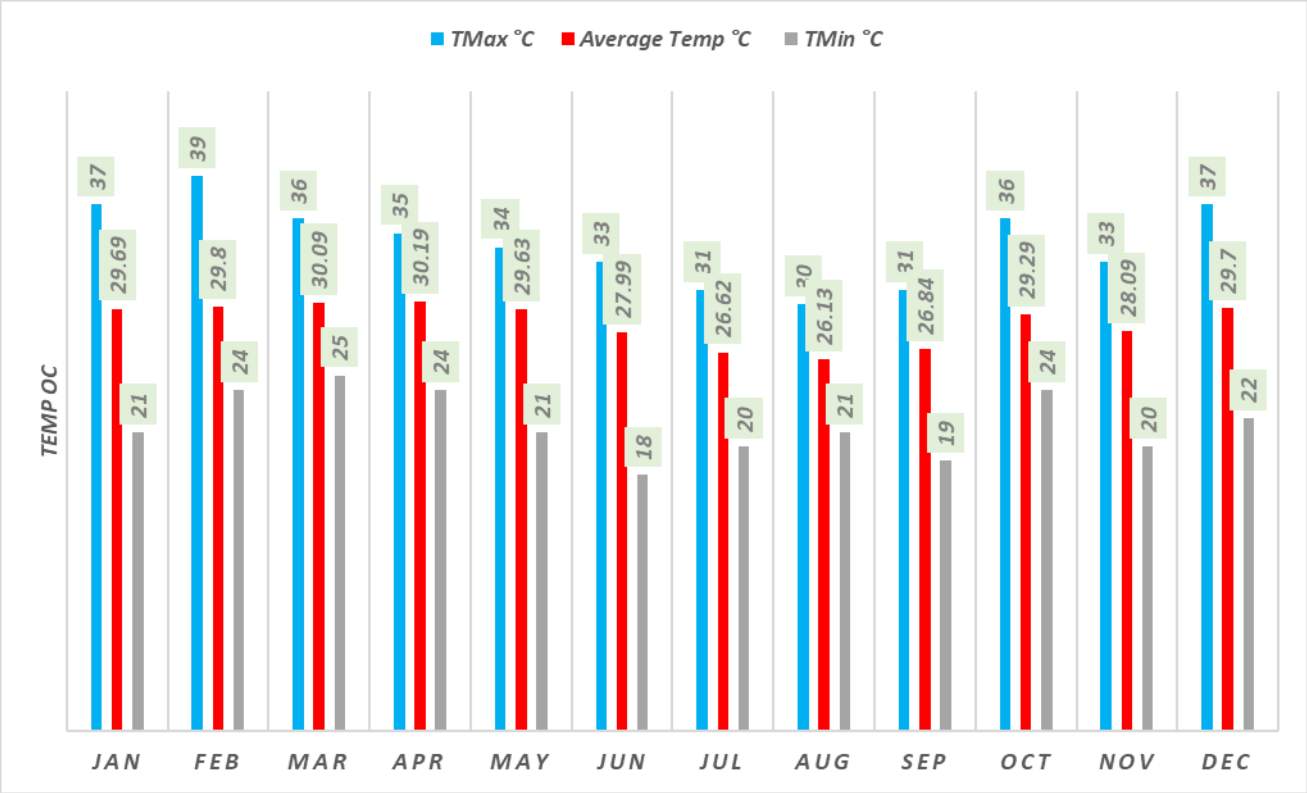


Figure 4.5: Average Temperature in the Study Area

Source: Nimet

4.5.1.3 Wind Speed and Direction

Surface wind speed is 0.5 – 7.7 m/s with an average of 3.6 m/s (Table 4.7) and prevailing southwest direction (Figure 4.6). The measured wind speed of 0.8 –1.7 m/s during the dry season fieldwork with northeast prevailing direction and 3.1 – 3.9 m/s with south-southwest prevailing direction in the dry season (Figure 4.6) also agree with the climatic data with south-southwest prevailing direction in the wet season (Figure 4.6) also agree with the climatic data. If the air is calm, pollutants cannot disperse, and then the concentration of these pollutants will build up. On the other hand, when strong, turbulent winds blow, pollutants disperse quickly, resulting in lower pollutant concentrations. In pollution, meteorology calms are associated with inversions (temperature increasing with height). Inversion may result in fumigation; meaning that emissions are trapped at ground level close to their source as against other situations where it is dispersed and diluted much more easily. Inversion is widely known to be frequent during the early hours of the day. A 30-year mean macro data shows that wind speed over the study environment is generally minimal and this signifies a low to moderate dispersive potential of the local atmosphere.

Table 4.7: Monthly Wind Data of Lagos State (1988-2024)

YEAR	Speed / Direction	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1988	Speed	6.1	7.1	8.7	7.6	6.4	6	7.7	8.7	7.4	5.7	5.8	5.9
	Direction	N	W	S	S	W	W	W	W	W	W	S	W
1989	Speed	6	8	8.6	7.6	6.5	6.9	8	9.7	2.5	5.9	5.1	5.5
	Direction	N	W	S	W	S	S	SW	W	W	SW	S	SW
1990	Speed	5.9	8.2	8.5	8.6	7.1	6.5	8.4	10.3	8.2	5.4	5.5	5.1
	Direction	N	S	S	S	SW	SW	SW	SW	SW	S	S	W
1991	Speed	7.2	8.7	8.4	9	6.1	5.9	8.7	9.7	8	5.5	4.1	5
	Direction	N	S	S	SW	SW	S	W	W	W	W	W	SW
1992	Speed	4.4	8.7	9	9.8	6.8	7.7	9.8	10.5	7.6	5.7	5.9	5
	Direction	SW	SW	W	SW	SW	SW	W	W	SW	W	SW	SW
1993	Speed	5.6	6.9	9.3	8.1	6.4	5.9	5.1	6.7	4.8	4.2	3.9	3.8
	Direction	S	S	S	S	S	S	S	SW	S	S	NW	NW
1994	Speed	3.2	1.6	5.9	4.5	2.9	3.7	3.9	4.2	3.9	3.4	4.2	3.2
	Direction	NE	E	W	SW	SW	SW	SW	SW	SW	SW	W	NE
1995	Speed	2	2.9	3.2	3	2.8	2.9	3.2	3.4	3.3	3.1	2.9	2
	Direction	W	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	W
1996	Speed	2.5	3	3.3	3.4	2.8	2.6	5.9	3.3	4.8	3.2	2.8	2.5
	Direction	SW	S	SW	S	SW	SW	SW	SW	W	S	SW	SW
1997	Speed	2.6	3.4	3.6	3.2	3	2.8	2.9	3.7	3.1	2.5	2.4	2.6
	Direction	N	W	S	S	W	W	W	W	W	W	S	N

1998	Speed	3.1	2.9	3.3	3.7	3.3	3	3.1	2.7	3.1	2.2	2.5	3.1
	Direction	W	W	S	S	S	S	W	W	W	W	W	W
1999	Speed	2.4	3	3.5	3.4	2.8	3.2	3.1	3.3	3.2	2.8	2.5	2.4
	Direction	W	SW	SW	SW	SW	SW	SW	SW	SW	SW	SW	W
2000	Speed	2.4	3.5	3.8	3.6	2.3	2.6	3.9	4	2.7	2.8	1.9	1.6
	Direction	S	S	S	S	S	S	S	SW	S	S	NW	NW
2001	Speed	2.2	3.4	4.6	4.2	2.5	3.1	4.2	4.2	3.7	3.4	2.7	3.5
	Direction	N	W	S	S	W	W	W	W	W	W	S	W
2002	Speed	4.6	3.6	4.5	4.3	4	3.9	4.7	5.4	3.5	3.9	2.6	3.5
	Direction	W	W	S	S	S	S	W	W	W	W	W	SW
2003	Speed	4.2	5.3	6.3	5.9	4.3	5.2	4.2	5.4	5.8	4	3.6	3.8
	Direction	W	S	S	S	S	S	W	W	SW	S	S	SW
2004	Speed	4.5	5.5	5.7	5.3	4.9	4.8	5.8	5.5	5.3	4.5	3.9	3.9
	Direction	W	S	S	W	S	W	S	SW	W	SW	S	SW
2005	Speed	4.5	5.3	5.4	5.1	4.7	4.6	5.1	5	5.2	4.1	3.7	3.8
	Direction	S	W	W	S	S	S	W	S	SW	S	SW	W
2006	Speed	4.4	4.7	5.1	4.8	4.5	4	6.2	5.1	3.9	3.1	3.1	3.1
	Direction	S	S	S	S	S	SW	SW	S	S	S	W	W
2007	Speed	4.3	4.9	5	5.2	4.2	3.9	5.1	5.9	5.1	3.8	3.9	3.7
	Direction	S	S	S	S	S	S	S	SW	S	S	NW	NW
2008	Speed	4.6	4.3	5.6	5.6	4.1	6.8	6.1	5.2	7.5	5.6	3.5	5.1
	Direction	N	W	S	S	W	W	W	W	W	W	S	W

2009	Speed	6.1	4.2	7.8	7.6	6.3	5.9	7.1	7.3	6.3	5.8	5.3	5.8
	Direction	W	W	S	S	S	S	W	W	W	W	W	SW
2010	Speed	6.1	7.1	8.7	7.6	6.4	6	7.7	8.7	7.4	5.7	5.8	5.9
	Direction	W	S	S	S	S	S	W	W	SW	S	S	SW
2011	Speed	6	8	8.6	7.6	6.5	6.9	8	9.7	2.5	5.9	5.1	5.5
	Direction	W	S	S	W	S	W	S	SW	W	SW	S	SW
2012	Speed	6.1	7.1	8.7	7.6	6.4	6	7.7	8.7	7.4	5.7	5.8	5.9
	Direction	N	W	S	S	W	W	W	W	W	W	S	W
2013	Speed	6	8	8.6	7.6	6.5	6.9	8	9.7	2.5	5.9	5.1	5.5
	Direction	N	W	S	W	S	S	SW	W	W	SW	S	SW
2014	Speed	5.9	8.2	8.5	8.6	7.1	6.5	8.4	10.3	8.2	5.4	5.5	5.1
	Direction	N	S	S	S	SW	SW	SW	SW	SW	S	S	W
2015	Speed	7.2	8.7	8.4	9	6.1	5.9	8.7	9.7	8	5.5	4.1	5
	Direction	N	S	S	SW	SW	S	W	W	W	W	W	SW
2016	Speed	4.4	8.7	9	9.8	6.8	7.7	9.8	10.5	7.6	5.7	5.9	5
	Direction	SW	SW	W	SW	SW	SW	W	W	SW	W	SW	SW
2017	Speed	5.6	6.9	9.3	8.1	6.4	5.9	5.1	6.7	4.8	4.2	3.9	3.8
	Direction	S	S	S	S	S	SW	SW	S	S	S	W	W
2018	Speed	5.8	8	8.8	9.1	7.4	5.3	6.5	8.2	6.1	5.1	5.7	5
	Direction	S	S	S	S	S	S	S	SW	S	S	NW	NW
2019	Speed	5.5	6.4	7.1	6.7	5.7	6.1	5.9	5.9	5.9	5.8	5.7	4.7
	Direction	N	W	S	S	W	W	W	W	W	W	S	W

2020	Speed	5.1	4.8	5.2	5.5	4	0.4	6.1	9.5	4.2	3.1	1.2	5.1
	Direction	SW	S	SW	S	S	S	W	W	SW	SW	SW	S
2021	Speed	3.5	3.5	3.1	3.5	2.3	3.4	3.2	2.9	2.7	2.9	2.4	2.9
	Direction	W	W	SW	SW	SW	SW	SW	SW	SW	SW	W	S
2022	Speed	2.3	2.6	2.6	2.5	2.3	2.2	3	3.2	2.4	2.2	2.6	3.2
	Direction	N	E	W	SW	SW	SW	SW	SW	SW	SW	W	W

Source: NiMet

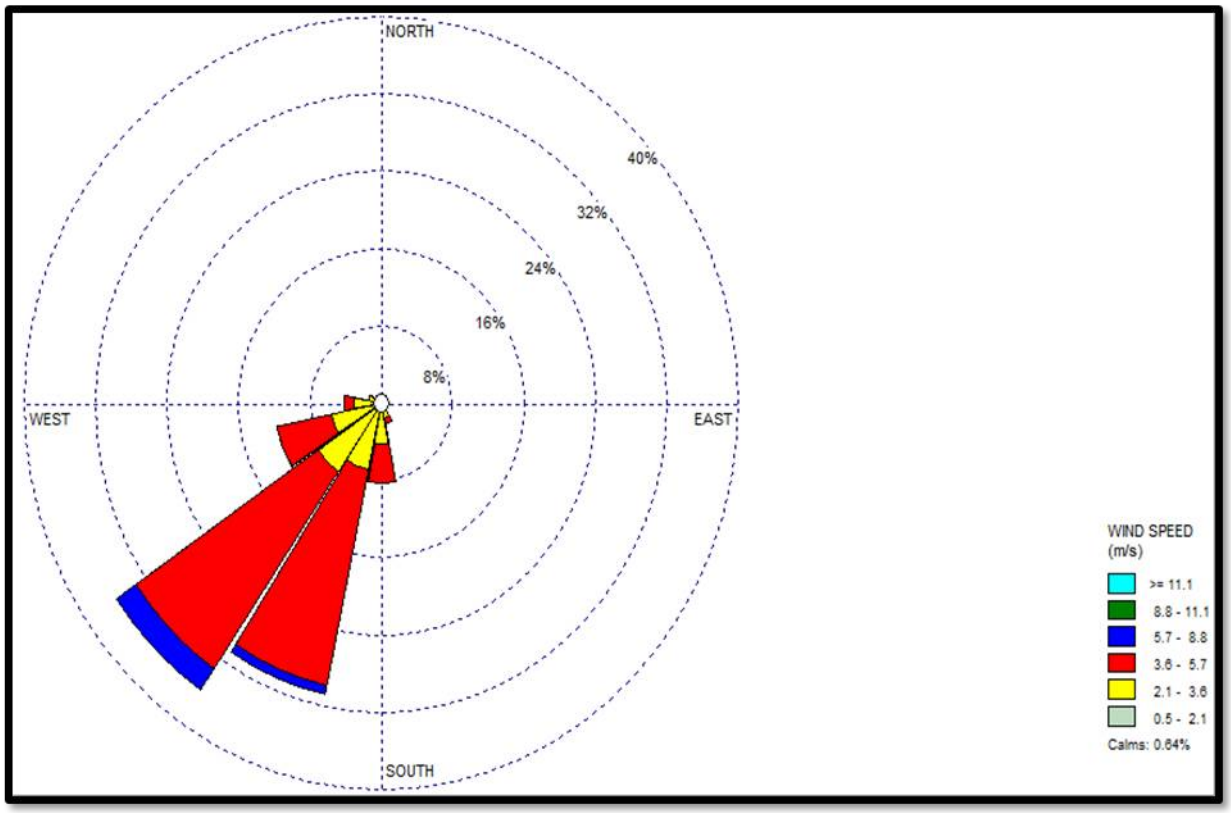


Figure 4.6: Prevailing Wind Direction in the Proposed Project Area

Source: Multiple Development Services (2026)

4.5.1.4 Relative Humidity

This is an indication of the water vapour content in the atmosphere. High relative humidity is indicative of moist conditions while low relative humidity suggests drier conditions. There is a marked diurnal variation in the relative humidity pattern of this area. It has an indirect relationship with temperature changes. The humidity is comfort level on the dew point, as it determines whether perspiration will evaporate from the skin, thereby cooling the body.

Relative humidity, linked to air temperature, influences cloud formation and precipitation types. A 37-year data span (1985-2024) shows average yearly humidity at 75.99%, varying from 67.1% in January to 81.83% in July Throughout 1985-2024, Lagos consistently maintains relative humidity above 60% monthly, irrespective of season. June and July peak at 81.01% and 81.83% respectively, correlating with the rainy season. High humidity, typical during the wet season, results from Lagos' location and near-constant rainfall. Peaks reach 81.63% from June to September, with January's low at 67.91%.

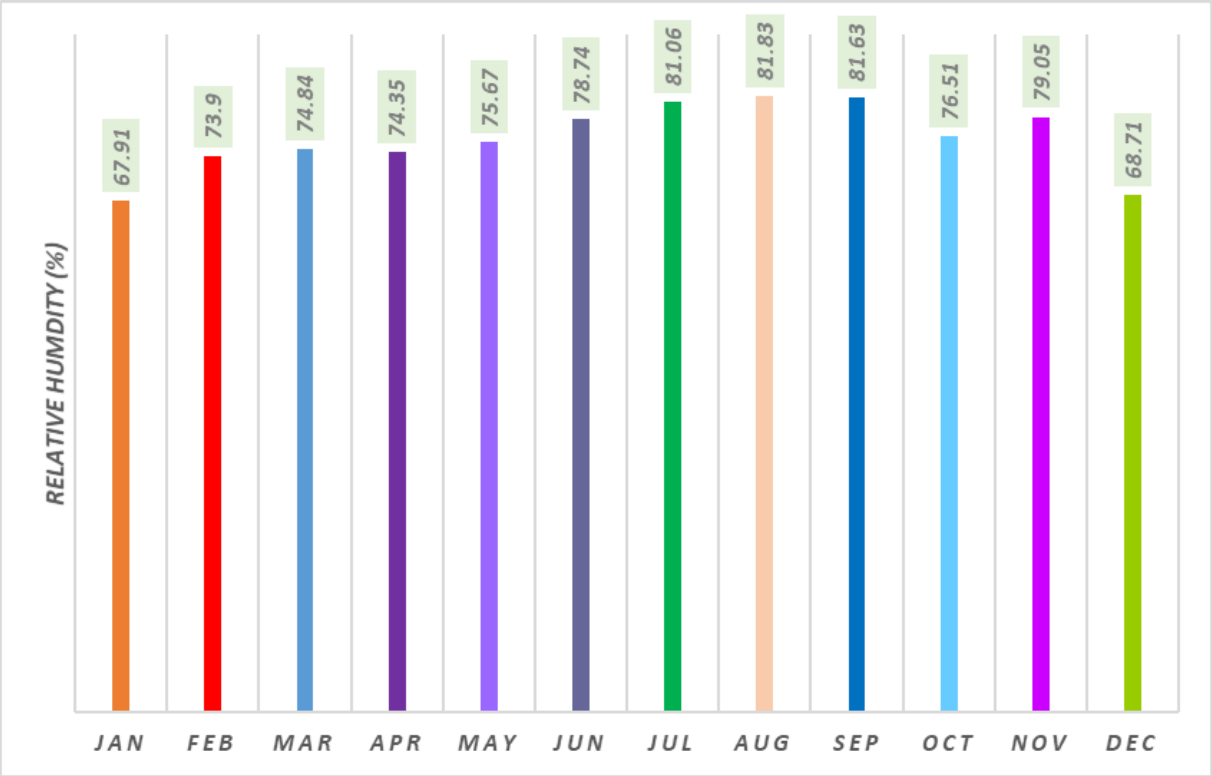


Figure 4.7: Average Relative Humidity in the Study Area

Source: Nimet

4.5.1.5 Sunshine Hours

Hours of daylight and darkness hardly vary for more than one hour during any period of the year because of the latitudinal location of the region. The annual sunshine period in the study area is about 1500 hours with monthly period of 51.2 – 165.7 hrs It receives the minimum period in July - September but the maximum in December - January. The short period in July could be due to the greater cloudiness and rainfall characteristic of the period. Conversely, the higher December sunshine period is due to the prevalent clear skies accompanying the ITCZ movement in its northward migration. The longest monthly sunshine hours occur in December/January in the dry season while July usually experiences the lowest values of sunshine hours. This can be attributed to constant cloudiness from rain clouds in the wettest

months. Sunshine hours are directly proportional to the net radiation. Net radiation and air temperature are highest during the dry season except when relatively cold harmattan winds occur.

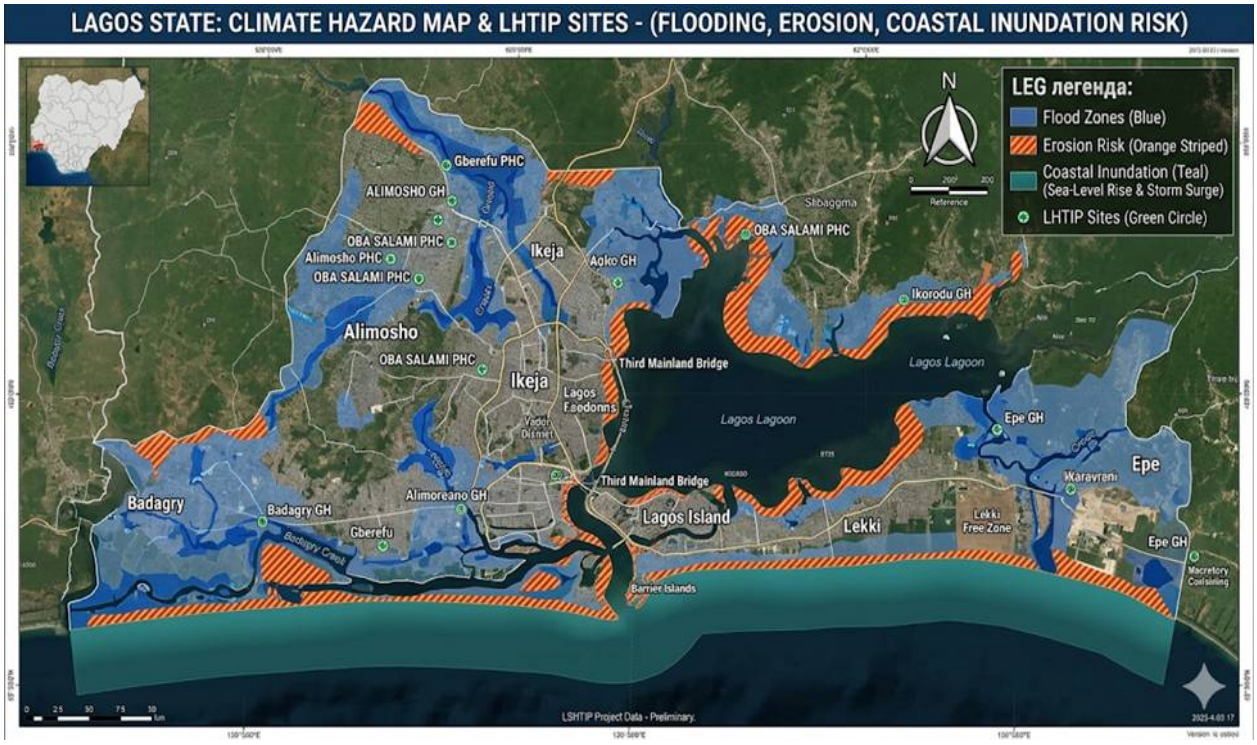


Figure 4.8: Monthly Average Sunshine Hours in the Study Area

Source: Nimet

4.5.1.6 Cloud Cover Categories

In the project areas, cloud cover is generally high throughout the year with very little variations. It is higher in May and October and lowest in June and July with average of 6.7 – 6.9 Oktas indicating overcast sky with blue patches.

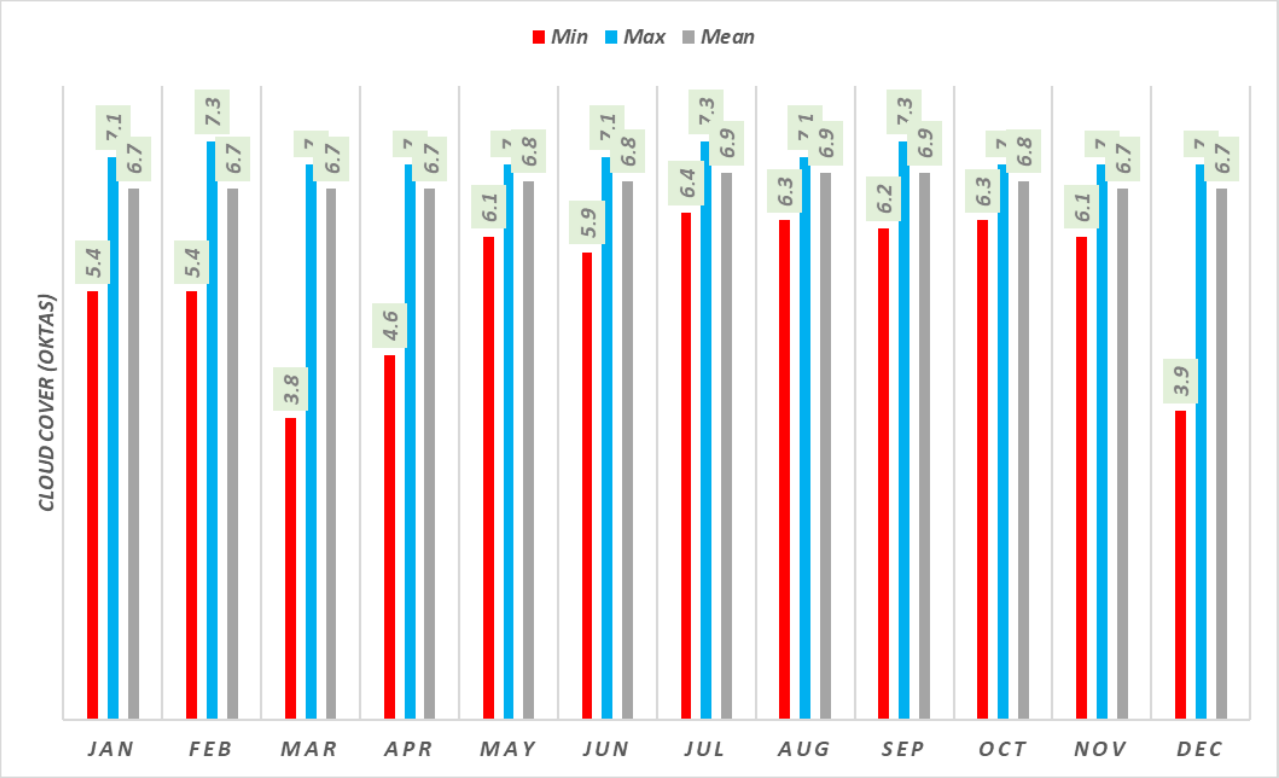


Figure 4.9: Cloud Cover in the Study Area

Source: Nimet

4.5.1.7 Atmospheric Pressure

The mean atmospheric pressure from the climatic data is 1015 – 1020 mbar with the minimum and maximum in January and June respectively. During the fieldwork, atmospheric pressure was measured to be 1007.1 – 1019.4 mbar in the dry season but 1011.1 – 1013.6 mbar in the dry season. These are also within the climatic data. Air pressure differences across various locations are the results of unequal heating across surfaces. This leads to wind blowing from high pressure areas towards low pressure areas. High pressure areas are usually associated with clear weather while low pressure areas are associated with unstable weather conditions which generate precipitation.

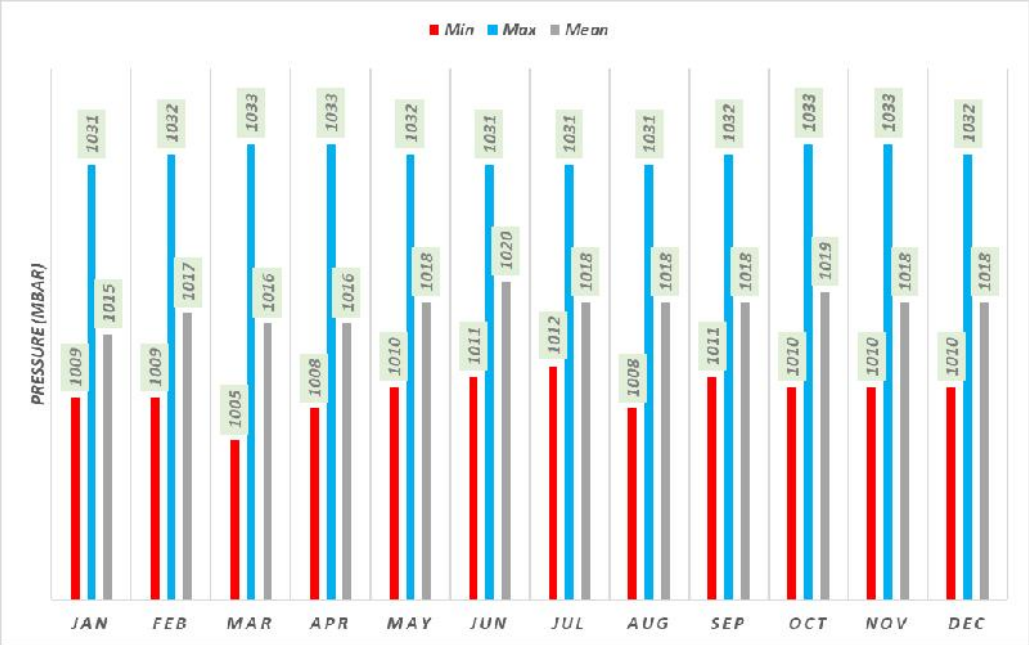


Figure 4.10: Average Pressure in the Study Area

Source: Nimet

4.5.2 Geology and geomorphology of Lagos State

Lagos State is underlain by the Benin Formation (Coastal Plain Sands) of Miocene to Recent age, a sequence of unconsolidated, highly permeable quartz sands with interbedded clay lenses. The surface geology is dominated by these sands, with recent littoral and alluvial deposits along the coastline, lagoons, and creeks.

Geomorphologically, Lagos is a low-lying coastal state with elevations ranging from 0 to 50 metres above sea level, characterized by continental sands on the mainland, littoral swamps and mangrove forests, extensive lagoons and creeks, and sandy barrier islands.

Hydrogeologically, Lagos hosts a multi-layered aquifer system with at least four major horizons. The second aquifer, at depths of 20 to 100 metres below sea level, provides over 75 percent of groundwater for domestic and industrial use, notably in the Ikeja and Ojota axis. Deeper aquifers offer excellent water quality but are vulnerable to saltwater up-coning if over-pumped.

Table 4.8: Geology and Geomorphology of Agbowa, Ejirin, Solu Alade, and Orimedu PHCs

Location (PHC / LGA)	Geology	Geomorphology	Key Notes

Agbowa PHC (Epe fringe, Lagos State)	Predominantly coastal plain sands with interbedded clay lenses and fluvio-lagoonal sediments influenced by nearby Lagos Lagoon system	Gently undulating terrain transitioning into low-lying areas with scattered wetlands and seasonal floodplains	Well-drained in upland sections but localized poor drainage in clay-rich zones; moderate susceptibility to surface runoff and seasonal flooding
Ejirin PHC (Epe LGA, Lagos State)	Dominated by alluvial and lagoonal deposits (sand, silt, and clay mixtures) under strong lagoonal and tidal influence	Low-lying floodplain environment closely linked to Lagos Lagoon with extensive wetland and marshy areas	High groundwater table; very high flood and waterlogging susceptibility; frequent seasonal inundation and poor natural drainage conditions
Solu Alade PHC (Badagry axis, Lagos State)	Coastal plain sands with minor clay intercalations typical of fluvio-lagoonal sedimentation environment	Generally flat to gently sloping terrain with localized depressions and intermittent wetland patches	Moderately well-drained compared to lagoon core zones; surface runoff accumulates during intense rainfall events
Orimedu PHC (Ibeju-Lekki LGA, Lagos State)	Predominantly coastal plain sands with minor clay layers and marine-influenced sandy deposits	Gently undulating coastal terrain with sandy ridges, shallow depressions, and occasional wetland pockets	Better drainage capacity due to sandy soils; moderate flood risk mainly from intense rainfall and coastal proximity

Source: Multiple Development Services (2026)

Table 4.9: Hydrology and Drainage of Agbowa, Ejirin, Solu Alade and Orimedu PHCs (Lagos Coastal Zone)

Location (PHC / LGA)	**Hydrology**	**Drainage Characteristics**	**Key Notes**

Agbowa PHC (Epe fringe, Lagos State)	Rainfall-dominated hydrological system with partial influence from Lagos Lagoon backwater effects	Moderate infiltration in sandy uplands; reduced drainage efficiency in clayey low-lying pockets	Localized flooding during peak rainfall; requires improved stormwater channels in settlement zones
Ejirin PHC (Epe LGA, Lagos State)	Strong lagoon-influenced hydrology with tidal interaction and seasonal rainfall control	Poor drainage due to very low elevation, high groundwater table, and wetland dominance	Very high flood vulnerability; frequent waterlogging and overflow of adjacent lagoonal systems
Solu Alade PHC (Badagry axis, Lagos State)	Rainfall-driven hydrology with minor lagoonal influence during peak wet season	Mixed drainage condition: moderate infiltration in sandy soils but surface runoff accumulation in depressions	Moderate flood risk; drainage capacity reduces during intense rainfall events
Orimedu PHC (Ibeju-Lekki LGA, Lagos State)	Coastal rainfall-dominated hydrology with slight marine influence	Generally good infiltration due to sandy soils; limited but functional surface runoff pathways	Moderate drainage efficiency; occasional ponding in low-lying areas during heavy rainfall

Source: Multiple Development Services (2026)

4.5.3 Ambient Air Quality and Noise Level

This section presents the baseline air quality and noise monitoring results conducted at four Primary Health Center (PHC) locations within Lagos State. The assessment establishes pre-project or existing environmental conditions against which future impacts will be evaluated. Monitoring was conducted in accordance with the Federal Ministry of Environment (FMEnv) Guidelines, National Environmental Standards and Regulations Enforcement Agency (NESREA) Regulations, and the International Finance Corporation (IFC) Environmental, Health, and Safety (EHS) Guidelines.

Ambient air quality and noise measurements were conducted at selected Primary Health Care (PHC) facilities in Lagos State. Parameters measured included Relative Humidity (RH%), PM2.5, PM10, CO_2, Temperature, Formaldehyde (HCHO), Air Quality Index (AQI), Noise,

and Total Volatile Organic Compounds (TVOC). Results were benchmarked against FMEnv, NESREA, and IFC standards.

Table 4.10: List of the Measured Parameters for Air Quality and Equipment Used

Parameter	Equipment Name & Model	Detection Limit	Mode of Operation
Particulate Matter (PM2.5 & PM10)	Aeroqual Series 500 with the respective sensor heads	PM (0-2,000 µg/m³)	Sensors are housed within an interchangeable 'sensor head' that attaches to the monitor base. Each sensor head contains a single gas or particle sensor. Swapping sensor heads takes seconds, can be done in the field, and no configuration or re-calibration is required. Active sampling is a key design feature. Each sensor head contains a fan that works continuously or periodically (depending on the sensor type) to draw sample air to the sensor. Once sampled the air is exhausted from the opposite side of the sensor head.
Volatile Organic Compound	Aeroqual Series 500	VOC (0-50ppm)	
Carbon monoxide	Aeroqual Series 500	CO (0-100ppm)	
Ozone	Aeroqual Series 500	O3 (0-50ppm)	
Nitrogen dioxide	Aeroqual Series 500	NO2 (0-1ppm)	

Parameter	Equipment Name & Model	Detection Limit	Mode of Operation
Meteorological Parameters	Kestrel Weather Meter 5500		
Temperature		0 to 55°C	The Kestrel weather meter is turned ON pressing and holding the power button until the display activates. The units of measurement are configured, and the desired weather parameters are selected after which actual measurements of the parameters is done. Finally, the displayed values are recorded.
Relative Humidity		0 – 100%	
Barometric Pressure		900-1030 hPa	
Windspeed		0.1-40 m/s	

Source: MDS Field Work 2026



Plate 4.2: Geographical Positioning System (GPS): For obtaining the geographical coordinates of locations.



Plate 4.3: Kestrel: For measuring meteorological parameters (temperature, wind speed, humidity, barometric pressure etc)



Plate 4.4: Sound level meter: is used to measure sound pressure levels in a given environment



Plate 4.5: Aeroqual Gas Sensing: For measuring Particulate Matters ($PM_{2.5}$ & PM_{10}), CO, VOC, NO_2 & O_3



Plate 4.6: Aeroqual Sensor Heads

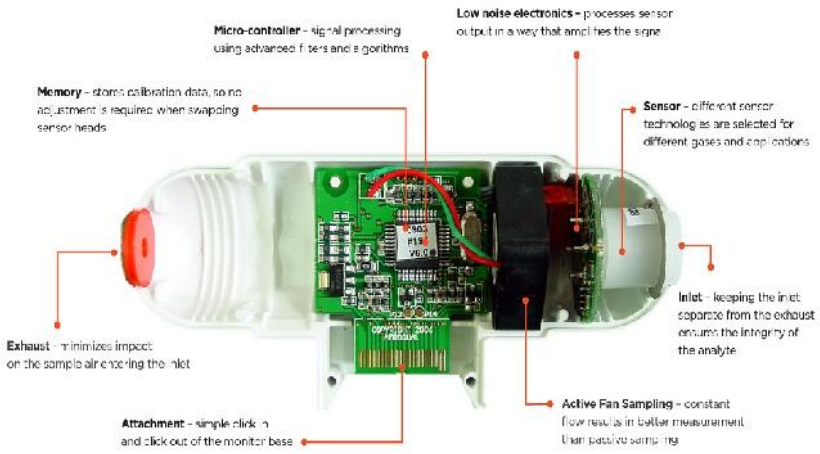


Plate 4.7: Components of the Aeroqual 500 series Monitor

Source: Multiple Development Services (2026)

4.5.4 Ambient Air Quality

4.5.4.1 Baseline Ambient Air Quality Assessment

The baseline ambient air quality monitoring conducted across four (4) Primary Health Care (PHC) locations—Agbowa, Ejirin, Solu Alade, and Orimedu in Lagos State—provides an overview of prevailing environmental conditions and their compliance with relevant national and international air quality guidelines.

Overall, the results indicate spatial variability in air quality conditions across the study locations, with relatively better conditions observed at Orimedu PHC and Ejirin PHC (in terms of gaseous pollutants), while Solu Alade PHC recorded comparatively elevated particulate matter and AQI values in certain sampling points.

4.5.4.2 Particulate Matter (PM2.5 & PM10)

Monitoring results indicate variable particulate matter conditions across the four PHC locations, with occasional exceedances observed in select sampling points.

PM10 concentrations ranged from 5.2 to 76 µg/m³.

- Agbowa PHC recorded moderate values (5.2–16 µg/m³), generally within acceptable limits.
- Ejirin PHC showed low to moderate concentrations (6.7–17.8 µg/m³), indicating relatively good air quality.
- Orimedu PHC recorded moderate variability (49–76 µg/m³), with SP2 and SP3 approaching or exceeding guideline thresholds, indicating localized dust influence.

- Solu Alade PHC recorded the highest particulate levels (33–76 µg/m³), with multiple exceedances above the IFC guideline value of 50 µg/m³, suggesting active dust re-suspension and anthropogenic emissions.

PM2.5 concentrations ranged from 7.6 to 58 µg/m³.

- Agbowa PHC remained generally low to moderate (7.6–12.3 µg/m³), within acceptable limits.
- Ejirin PHC recorded low concentrations (7.6–10.2 µg/m³), indicating good fine particulate air quality.
- Orimedu PHC showed moderate levels (8–41 µg/m³), with SP2 exceeding the WHO/IFC guideline of 25 µg/m³.
- Solu Alade PHC recorded significantly elevated levels (33–58 µg/m³), with multiple exceedances, indicating episodic deterioration in fine particulate air quality.

4.5.4.3 Carbon Dioxide (CO2)

CO2 concentrations across all sampling locations ranged from 300 to 546 ppm, which are within normal ambient atmospheric background levels.

- Solu Alade PHC recorded comparatively lower CO2 values (300–400 ppm), indicating effective dispersion and open-air conditions.
- Ejirin PHC recorded relatively higher values (520–546 ppm), likely influenced by localized human activity and poor dispersion in low-lying terrain.
- Agbowa and Orimedu PHCs showed moderate levels consistent with typical ambient urban–peri-urban environments.

Overall, results indicate no evidence of confined atmospheric conditions or significant CO2 accumulation across the study areas.

4.5.4.4 Formaldehyde (HCHO)

Formaldehyde concentrations across all sampling points ranged from 0.01 to 0.02 ppm, which are significantly below the WHO guideline value of 0.08 ppm.

No exceedances were recorded across Agbowa, Ejirin, Solu Alade, or Orimedu PHCs, indicating minimal influence from combustion processes, chemical emissions, or indoor off-gassing sources within the study environments.

Total Volatile Organic Compounds (TVOC)

TVOC concentrations ranged from 50.2 to 79.4 µg/m³, which are well below the reference threshold of 500 µg/m³.

- Ejirin PHC and Agbowa PHC recorded moderate levels (50.2–79.4 µg/m³), reflecting minor background emissions.

- Solu Alade PHC showed moderately elevated values (56.9–60.1 µg/m³), likely influenced by surrounding anthropogenic activities.
- Orimedu PHC recorded similar moderate levels (58.7–68.5 µg/m³), consistent with coastal background emissions.

Overall, results indicate generally acceptable VOC conditions across all PHCs.

4.5.4.5 Air Quality Index (AQI)

The AQI values ranged from 28 to 69, indicating overall good to moderate air quality conditions.

- Ejirin PHC recorded the lowest AQI values (28–42), indicating the best air quality conditions among the study locations.
- Agbowa PHC showed moderate AQI levels (36–51).
- Solu Alade PHC recorded elevated AQI values (52–61), indicating moderate pollution conditions.
- Orimedu PHC recorded the highest AQI values (63–69), suggesting moderate air quality stress, primarily driven by particulate matter contributions.

4.5.4.6 Conclusion

The baseline assessment indicates that ambient air quality across Agbowa, Ejirin, Solu Alade, and Orimedu PHCs is generally acceptable and largely compliant with international air quality standards, particularly for gaseous pollutants such as CO2, HCHO, and TVOC.

However, localized exceedances in particulate matter (PM2.5 and PM10) were observed, most notably at:

- Solu Alade PHC (highest and most consistent exceedances)
- Orimedu PHC (moderate exceedances at select points)

These exceedances are likely associated with dust re-suspension, nearby traffic activity, and localized anthropogenic emissions, particularly in more active or disturbed environments.

In contrast, Agbowa and Ejirin PHCs exhibited relatively better air quality conditions, especially in terms of fine particulate matter and gaseous pollutants.

Continuous air quality monitoring is recommended—particularly at Solu Alade and Orimedu PHCs—to track particulate fluctuations and support the implementation of appropriate mitigation measures to ensure sustained compliance with air quality standards and protection of public health.

Table 4.11: Regulatory Limit Summary Table (Air Quality Parameters)

Parameter	FMEnv Limit	NESREA Limit	IFC/World Bank Limit	WHO Guideline	Unit	Applicable Standard
PM2.5 (24-hour mean)	35	35	25	15 (interim) / 5 (final)	µg/m³	25 (IFC)
PM10 (24-hour mean)	250	250	50	45 (interim) / 15 (final)	µg/m³	50 (IFC)
CO2 (8-hour TWA)	NS	NS	5,000	NS	ppm	5,000 (IFC)
Formaldehyde (HCHO) (30-minute mean)	NS	NS	NS	0.08	ppm	0.08 (WHO)
TVOC	NS	NS	NS	500 (comfort reference)	µg/m³	500 (Reference)
Temperature	No standard	No standard	No standard	No standard	°C	N/A
Relative Humidity (RH)	No standard	No standard	No standard	No standard	%	N/A

NS = Not Specified in accessible regulations

Applicable Standard: Per IFC Performance Standards, the more stringent standard between host country regulations and IFC/WHO guidelines applies.

Table 4.12: Ambient Air Quality Measured at the Study Area with Regulatory Limits

Location / SP	NO2 (ppm)	SO2 (ppm)	NH3 (ppm)	H2S (ppm)	RH (%)	PM2.5 (µg/m³)	PM10 (µg/m³)	CO2 (ppm)	Temp (°C)	HCHO (ppm)	CO (ppm)	AQI	TVOC (µg/m³)	Coordinates (Lat, Lon)
Regulatory Limit	0.10	0.10	25	0.10	70	25	50	5000	---	0.08	10	100	500	---
Agbowa PHC SP1	0.1	0.0	0.0	0.32	68	9.2	16.0	531	37.4	0.01	0.0	38	60.2	6.639779, 3.712229
Agbowa PHC SP2	0.0	0.0	0.0	0.31	66	8.5	15.6	539	37.8	0.02	0.0	36	62.5	6.640013, 3.712229
Agbowa PHC SP3	0.1	0.0	0.0	0.33	68	12.3	8.3	528	37.4	0.01	0.0	51	79.4	6.640133, 3.712409
Ejirin PHC SP1	0.0	0.0	0.0	0.15	90.3	10.2	17.8	546	31.3	0.01	0.0	42	61.4	6.612939, 3.897653
Ejirin PHC SP2	0.1	0.0	0.0	0.15	84	7.7	14.0	525	33.4	0.02	0.0	32	50.2	6.613522, 3.897803
Ejirin PHC SP3	0.1	0.0	0.0	0.32	77	7.6	6.7	520	35.4	0.01	0.0	28	60.2	6.612811, 3.897735
Solu Alade PHC SP1	0.1	0.0	0.0	0.0	83.9	58	61	300	26.9	0.01	0.0	52	58.4	6.439170, 3.789860
Solu Alade PHC SP2	0.0	0.0	0.0	0.0	86.9	33	69	300	26.4	0.02	0.0	55	56.9	6.439580, 3.789740

Solu Alade PHC SP3	0.1	0.0	0.0	0.0	87.9	34	76	400	26.8	0.01	0.0	61	60.1	6.439370, 3.788060
Orimedu PHC SP1	0.0	0.0	0.0	0.0	89.7	33	51	402	26.5	0.01	0.0	69	58.7	6.440660, 3.901410
Orimedu PHC SP2	0.1	0.0	0.0	0.0	91.3	41	76	406	26.6	0.02	0.0	64	59.1	6.440700, 3.901910
Orimedu PHC SP3	0.1	0.0	0.0	0.0	93.4	8	49	411	26.1	0.01	0.0	63	68.5	6.439280, 3.902030

Source: MDS Field Work 2026

4.5.5 Noise Level

4.5.5.1 Baseline Summary

The monitoring results indicate that noise levels across the PHC locations—Agbowa, Ejirin, Solu Alade, and Orimedu—are generally low to moderate, with a limited number of sampling points exceeding the recommended 55 dB(A) daytime guideline limit. This suggests localized and less frequent noise disturbances compared to more urbanized or high-activity areas.

- Overall, approximately 33% of the monitored locations (4 out of 12 sampling points) exceeded the 55 dB(A) guideline threshold, indicating occasional but noticeable noise intrusion within the study area.
- The highest noise level recorded was 72.1 dB(A) at Agbowa PHC SP3, representing a significant exceedance above the recommended limit. This suggests the presence of localized high-intensity noise sources, potentially linked to traffic movement, community activities, or nearby commercial operations.
- At Agbowa PHC, noise levels ranged from 51.0 to 72.1 dB(A), showing moderate conditions with a clear hotspot at SP3.
- Ejirin PHC recorded relatively low noise levels (49.5 to 51.0 dB(A)), all within the acceptable guideline, indicating a quiet environment suitable for healthcare delivery.
- Solu Alade PHC exhibited the lowest noise levels (42.9 to 47.9 dB(A)), remaining entirely within permissible limits and reflecting minimal environmental noise influence.
- Orimedu PHC recorded moderate noise levels ranging from 51.0 to 56.2 dB(A), with slight exceedances at SP2 and SP3, indicating mild but noticeable ambient noise presence.

Table 4.13: Regulatory Limit Summary Table (Noise Parameter)

Parameter	FMEnv Limit	NESREA Limit	IFC/World Bank Limit	WHO Guideline	Unit	Applicable Standard
Noise (Daytime - Residential/Institutional)	55	55	55	55	dB(A)	55 (All)

Applicable Standard: All regulatory frameworks (FMEnv, NESREA, IFC, WHO) converge on a daytime limit of 55 dB(A) for residential and institutional areas, including healthcare facilities.

Table 4.14: Noise Level Measured at the Study Area with Regulatory Limit

Location / Sampling Point (SP)	Noise Level (dB(A))	Regulatory Limit (dB(A))	Status	Coordinates (Lat, Lon)
Regulatory Limit	55	---	---	---
Agbowa PHC SP1	51.0	55	Compliant	6.639779, 3.712229
Agbowa PHC SP2	60.2	55	Non-Compliant	6.640013, 3.712229
Agbowa PHC SP3	72.1	55	Non-Compliant	6.640133, 3.712409
Ejirin PHC SP1	50.1	55	Compliant	6.612939, 3.897653
Ejirin PHC SP2	49.5	55	Compliant	6.613522, 3.897803
Ejirin PHC SP3	51.0	55	Compliant	6.612811, 3.897735
Solu Alade PHC SP1	42.9	55	Compliant	6.439170, 3.789860
Solu Alade PHC SP2	47.9	55	Compliant	6.439580, 3.789740
Solu Alade PHC SP3	47.6	55	Compliant	6.439370, 3.788060
Orimedu PHC SP1	51.0	55	Compliant	6.440660, 3.901410
Orimedu PHC SP2	54.4	55	Compliant	6.440700, 3.901910
Orimedu PHC SP3	56.2	55	Non-Compliant	6.439280, 3.902030

Source: MDS Field Work 2026

4.5.5.2 Key Findings on Noise Levels

Extent of Exceedance: Four out of twelve sampling points (33%) exceeded the 55 dB(A) daytime guideline, indicating a moderate but location-specific noise impact across the assessed PHC facilities.

The observed exceedances ranged from approximately 56.2 dB to 72.1 dB, representing about 2% to 31% exceedance above the recommended threshold depending on the sampling location.

Compliance Observations: Relative compliance (i.e., lower exceedance intensity within the dataset) was observed at:

- Orimedu PHC SP2 (54.4 dB) – marginally below guideline
- Orimedu PHC SP1 (51.0 dB) – within acceptable limit
- Ejirin PHC SP1–SP3 (49.5–51.0 dB) – fully compliant across all sampling points
- Solu Alade PHC SP1–SP3 (42.9–47.9 dB) – consistently below guideline limits

Note: These locations represent low-noise environments, suitable for healthcare delivery with minimal disturbance.

Location-Specific Results:

- Agbowa PHC recorded variable noise levels ranging from 51.0 to 72.1 dB, with one clear exceedance at SP3 (72.1 dB). This represents the highest noise level within the study area, indicating a localized hotspot likely influenced by traffic movement, community activity, or equipment use.
- Ejirin PHC recorded consistently low noise levels (49.5–51.0 dB) across all sampling points, indicating full compliance with the WHO/IFC guideline and a quiet ambient environment.
- Solu Alade PHC exhibited the lowest noise levels (42.9–47.9 dB), with all sampling points well below the guideline limit, suggesting minimal anthropogenic noise influence.
- Orimedu PHC recorded moderate noise levels ranging from 51.0 to 56.2 dB, with slight exceedances at SP2 and SP3. This indicates mild but noticeable ambient noise conditions, possibly linked to nearby human or transport activities.

Most Affected Location:

The highest noise level was recorded at Agbowa PHC SP3 (72.1 dB), representing an approximate 31% exceedance of the 55 dB(A) guideline.

This location constitutes the most significant noise hotspot within the study area and suggests the presence of strong localized noise sources, such as vehicular movement, nearby commercial activity, or generator operations.

4.5.5.3 Conclusions

Noise pollution across the assessed PHC locations represents a generally low to moderate environmental concern, with localized high-intensity hotspots, particularly within the Agbowa PHC cluster.

- Solu Alade and Ejirin PHCs demonstrate excellent compliance, with consistently low noise levels and minimal disturbance.
- Orimedu PHC shows mild and intermittent exceedances, indicating moderate ambient noise influence.
- Agbowa PHC presents the most notable concern, with a clear hotspot at SP3, suggesting localized anthropogenic noise sources.

The observed noise patterns are primarily influenced by human activities, including vehicular traffic, generator usage, and community interactions, particularly in more active or accessible areas.

While overall noise conditions are not critically hazardous, the presence of localized exceedances—especially at Agbowa PHC SP3 and Orimedu PHC (SP3)—necessitates targeted mitigation measures. These may include:

- Improved siting and enclosure of generators
- Installation of acoustic control measures where feasible
- Regulation of high-noise activities within PHC environments
- Consideration of facility layout to reduce exposure to sensitive receptors

Continuous noise monitoring is recommended to track temporal variations and ensure sustained compliance with acceptable environmental noise standards, particularly in identified hotspot locations.

4.5.6 Groundwater Quality Results and Regulatory Compliance

This section presents the baseline groundwater quality assessment for four (4) Primary Health Centers (PHCs) within cluster 5 of the study area. The assessment evaluates physico-chemical and microbiological parameters against applicable national and international drinking water quality standards, including:

- **WHO** (World Health Organization) Guidelines for Drinking-water Quality, 4th Edition (2017)
- **NESREA** Nigerian Standard for Drinking Water Quality (NSDWQ, 2015)
- **FMEnv** Federal Ministry of Environment - National Environmental (Drinking Water Quality) Regulations
- **IFC** (International Finance Corporation / World Bank) EHS Guidelines for Water Quality

Table 4.15: Complete Analytical Results with Standards

Parameter	Agbowa PHC SP1	Agbowa PHC SP2	Ejirin PHC SP1	Ejirin PHC SP2	Solu Alade PHC SP1	Solu Alade PHC SP2	Orimedu PHC SP1	Orimedu PHC SP2	Regulatory Limit (WHO/NESREA/FMEnv/IFC)
Coordinates	6.639779, 3.712229	6.640133, 3.712409	6.612939, 3.897653	6.612821, 3.897735	6.439170, 3.789860	6.439370, 3.788060	6.440660, 3.901410	6.439280, 3.902030	---
Appearance	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear
True Colour (Hz)	<5	<5	<5	<5	<5	<5	<5	<5	<15
Odour	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable
EC (µS/cm)	165.6	850.0	850.0	850.0	192.6	185.0	850.0	850.0	1000
Turbidity (NTU)	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	5
pH	5.4	7.6	7.6	7.6	7.6	7.5	7.6	7.6	6.5–8.5
TDS (mg/L)	124.2	637.5	637.5	637.5	144.4	140.0	637.5	637.5	500

Total Solids (mg/L)	142.7	656.5	656.5	656.5	163.0	160.0	656.5	656.5	500
Total Hardness (mg/L)	19.1	204.9	204.9	204.9	271.9	260.0	204.9	204.9	200
Total Alkalinity (mg/L)	4.6	175.8	175.8	175.8	36.5	34.0	175.8	175.8	200
Chloride (mg/L)	9.1	79.6	79.6	79.6	<0.05	<0.05	79.6	79.6	250
Nitrate (mg/L)	8.1	4.6	4.6	4.6	<0.05	<0.05	4.6	4.6	50
Sulphate (mg/L)	5.1	50.2	50.2	50.2	16.4	15.0	50.2	50.2	250
Heavy Metals	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	WHO Limits
DO (mg/L)	6.6	6.6	6.6	6.6	13.0	12.5	6.6	6.6	≥5
BOD (mg/L)	9.0	7.0	7.0	7.0	0.87	1.0	7.0	7.0	≤6

COD (mg/L)	16.0	12.0	12.0	12.0	0.01	0.02	12.0	12.0	≤10
Total Coliform (CFU/ml)	865	226	226	226	312	300	226	226	0
E. coli (CFU/ml)	10	0	0	0	0	0	0	0	0
Yeast/Mould (CFU/ml)	625	425	425	425	881	850	425	425	---
Total Plate Count	1,861	1,726	1,726	1,726	1,365	1,300	1,726	1,726	≤100

Source: Bato Lab

4.5.6.1 Key Findings:

Physico-Chemical Characteristics

pH and General Water Chemistry

The pH across the study locations ranges from 5.4 to 7.6, indicating generally neutral conditions except at Agbowa PHC SP1 (pH 5.4), which is acidic and below the acceptable limit (6.5–8.5). This suggests localized geochemical influence that may enhance metal mobility and pipe corrosion.

Salinity and Dissolved Solids (EC, TDS, Total Solids)

Most locations (Agbowa SP2, Ejirin, Orimedu) recorded elevated EC (~850 µS/cm) and TDS (~637.5 mg/L) exceeding the 500 mg/L limit.

Solu Alade PHC (SP1 & SP2) shows significantly lower EC and TDS, indicating comparatively fresher water conditions.

This suggests moderate mineralization across most locations, with localized areas of better water quality at Solu Alade.

Total Hardness

Elevated hardness is observed across multiple locations (up to 271.9 mg/L at Solu Alade SP1), exceeding the 200 mg/L limit.

This indicates hard water conditions, which may lead to scaling and reduced soap efficiency.

Major Ions (Chloride, Nitrate, Sulphate)

Chloride, nitrate, and sulphate concentrations are generally within acceptable limits, indicating minimal saline intrusion and low nutrient pollution.

Exceptionally low chloride values at Solu Alade suggest minimal anthropogenic or marine influence.

Organic Pollution Indicators

Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD)

Agbowa PHC SP1 (BOD: 9.0 mg/L; COD: 16.0 mg/L) exceeds permissible limits, indicating significant organic pollution.

Ejirin and Orimedu show moderate exceedances (BOD ~7.0 mg/L; COD ~12.0 mg/L).

In contrast, Solu Alade PHC (SP1 & SP2) shows very low BOD and COD, indicating minimal organic contamination.

Dissolved Oxygen (DO)

DO levels are generally adequate (≥6.6 mg/L) across all sites.

Solu Alade PHC exhibits very high DO (~12–13 mg/L), suggesting good aeration and low organic load.

Heavy Metals

Heavy metals across all sampling points are below detectable or permissible limits, indicating:

No significant industrial contamination

Water quality concerns are primarily physico-chemical and microbiological

Microbiological Quality

Total Coliform

All locations recorded total coliform presence (226–865 CFU/ml), exceeding the standard of 0 CFU/ml, indicating widespread microbial contamination.

Agbowa PHC SP1 (865 CFU/ml) shows the highest contamination level.

E. coli

Detected only at Agbowa PHC SP1 (10 CFU/ml), indicating localized fecal contamination risk.

Other locations recorded 0 CFU/ml, suggesting absence of direct fecal pollution at those points.

Total Plate Count (TPC)

All locations significantly exceed the FMEnv limit (≤100 CFU/ml), with values up to 1,861 CFU/ml, indicating high microbial load and poor sanitary quality.

Yeast and Mould

Elevated counts (up to 881 CFU/ml) indicate organic enrichment and environmental contamination.

Overall Interpretation

The surface water quality across Agbowa, Ejirin, Solu Alade, and Orimedu PHCs shows variable conditions with localized areas of concern:

Agbowa PHC: Most impacted location with acidic pH, high organic pollution, and microbial contamination, including E. coli presence.

Ejirin and Orimedu PHCs: Moderate water quality with elevated TDS, hardness, and organic pollution, but no fecal contamination.

Solu Alade PHC: Relatively better physico-chemical quality, with low salinity and organic load, but still affected by microbial contamination.

4.5.7 Soil Quality Results and Regulatory Compliance

This section presents the baseline soil quality assessment for four (4) Primary Health Centers (PHCs) within cluster 5 of the study area. The assessment evaluates physico-chemical and microbiological parameters against applicable national and international soil quality standards; table below shows Complete Analytical Results with Standards.

Table 4.16: Complete Analytical Results with Standards for Soil

Parameter	Agbowa PHC SP1	Agbowa PHC SP2	Ejirin PHC SP1	Ejirin PHC SP2	Solu Alade PHC SP1	Solu Alade PHC SP2	Orimedu PHC SP1	Orimedu PHC SP2	Regulatory Limit (WHO/NESREA/FMEnv/IFC)
Coordinates	6.639779, 3.712229	6.640133, 3.712409	6.612939, 3.897653	6.612821, 3.897735	6.439170, 3.789860	6.439370, 3.788060	6.440660, 3.901410	6.439280, 3.902030	—
Appearance	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear
True Colour (Hz)	<5	<5	<5	<5	<5	<5	<5	<5	<15
Odour	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable
EC (µS/cm)	165.6	850.0	850.0	850.0	192.6	185.0	850.0	850.0	1000
Turbidity (NTU)	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	5
pH	5.4	7.6	7.6	7.6	7.6	7.5	7.6	7.6	6.5–8.5
TDS (mg/L)	124.2	637.5	637.5	637.5	144.4	140.0	637.5	637.5	500
Total Solids (mg/L)	142.7	656.5	656.5	656.5	163.0	160.0	656.5	656.5	500

Total Hardness (mg/L)	19.1	204.9	204.9	204.9	271.9	260.0	204.9	204.9	200
Total Alkalinity (mg/L)	4.6	175.8	175.8	175.8	36.5	34.0	175.8	175.8	200
Chloride (mg/L)	9.1	79.6	79.6	79.6	<0.05	<0.05	79.6	79.6	250
Nitrate (mg/L)	8.1	4.6	4.6	4.6	<0.05	<0.05	4.6	4.6	50
Sulphate (mg/L)	5.1	50.2	50.2	50.2	16.4	15.0	50.2	50.2	250
Heavy Metals	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	WHO Limits
DO (mg/L)	6.6	6.6	6.6	6.6	13.0	12.5	6.6	6.6	≥5
BOD (mg/L)	9.0	7.0	7.0	7.0	0.87	1.0	7.0	7.0	≤6
COD (mg/L)	16.0	12.0	12.0	12.0	0.01	0.02	12.0	12.0	≤10
Total Coliform (CFU/ml)	865	226	226	226	312	300	226	226	0

E. coli (CFU/ml)	10	0	0	0	0	0	0	0	0
Yeast/Mould (CFU/ml)	625	425	425	425	881	850	425	425	—
Total Plate Count	1,861	1,726	1,726	1,726	1,365	1,300	1,726	1,726	≤100

Source: Bato Chemical lab 2026

4.5.7.1 Key Findings:

Soil Quality Assessment – Baseline Conditions and Key Findings

A comprehensive soil quality assessment was conducted across four sampling locations—Agbowa, Ejirin, Solu Alade, and Orimedu—to establish baseline environmental conditions for the project area. The results were evaluated in line with applicable standards from the World Health Organization (WHO), NESREA, Federal Ministry of Environment Nigeria, and the International Finance Corporation.

Physicochemical Characteristics

The soils across the study area exhibited varying physical characteristics ranging from light brown loamy soils at Agbowa to brownish sandy soils at Ejirin, greyish sandy soils at Solu Alade, and dark brown sandy soils at Orimedu. These variations reflect differences in soil texture, mineral composition, and depositional environments.

Moisture content was generally low across all locations, with the lowest values recorded at Solu Alade (1.3–1.5%) and Ejirin (2.2–2.4%), indicating poor water retention capacity typical of sandy soils. Agbowa and Orimedu exhibited relatively higher moisture content (~4.2–4.7%), suggesting slightly improved retention characteristics.

Soil pH ranged from slightly acidic to moderately alkaline (6.6–8.9). While most locations were within acceptable limits (6.0–8.5), Agbowa and Orimedu showed slightly alkaline conditions (up to 8.8–8.9), which may influence nutrient availability and soil microbial activity.

Total organic matter was generally low to moderate, with extremely low values recorded at Solu Alade (≤0.40%), indicating poor soil fertility. Agbowa showed relatively higher organic matter (~2.4–2.6%), suggesting comparatively better biological activity.

Nutrient and Ionic Composition

Chloride, sulphate, nitrate, and sodium concentrations across all locations remained within regulatory limits, indicating no evidence of salinity or sulphate contamination.

However, ammoniacal nitrogen levels were elevated across all sampling points, with the highest concentration recorded at Solu Alade (388–395 mg/kg). This suggests significant organic enrichment, likely arising from anthropogenic sources such as waste disposal, sewage infiltration, or agricultural activities.

Phosphate levels varied significantly, with low concentrations at Ejirin (~6 mg/kg) indicating nutrient limitation, while moderate levels were observed in other locations.

Essential cations (magnesium, calcium, and potassium) were present in moderate concentrations, although spatial variability suggests differences in soil fertility potential across the study area.

Heavy Metals and Toxicity Assessment

Heavy metals including arsenic, cadmium, chromium, lead, zinc, and manganese were below detectable limits across all sampling locations. Copper concentrations remained well below permissible limits, while iron levels, although variable, were within natural background ranges typical of tropical soils.

These results indicate that the study area is not impacted by heavy metal contamination and does not pose significant ecotoxicological risks.

Hydrocarbon Contamination

Oil and grease concentrations were consistently below detection limits (<0.01%) across all sampling locations, indicating the absence of hydrocarbon contamination and minimal influence from petroleum-related activities.

Microbiological Quality

Microbiological analysis revealed the presence of coliforms across all locations, although at relatively low counts (<23–<82 CFU/g). Total plate count values exceeded the recommended limit of ≤1000 CFU/g in Agbowa, Orimedu, and partially in Ejirin, while Solu Alade and Ejirin showed comparatively lower microbial loads.

Yeast and mould counts were moderate across all sites, indicating the presence of organic decomposition activity.

These findings suggest localized biological contamination, likely associated with waste disposal practices and human activity.

Overall Environmental Interpretation

The soil quality assessment indicates that the study area is largely free from heavy metal, hydrocarbon, and salinity-related contamination. However, there are clear indications of anthropogenic influence, particularly in the form of elevated ammoniacal nitrogen levels, localized nutrient depletion (Ejirin), and microbial contamination in selected areas.

Implications for the Project

The observed soil conditions indicate moderate environmental sensitivity across the study area. While chemical contamination risks are low, biological contamination and nutrient imbalance may affect soil health and land productivity.

Appropriate mitigation measures, including improved waste management practices, control of organic loading, and routine soil quality monitoring, will be necessary to ensure environmental sustainability and compliance with applicable regulatory standards throughout the project lifecycle.

4.6 Biological Environment

4.6.1 Vegetation and Land Cover

Table 4.17: Vegetation and Land Cover – Group 5 (Dry Season Observation)

Site	Land Cover Type	Description (Dry Season)	Wet Season Change
Agbowa PHC	Grassland, farmland, mixed vegetation	Mixed aquatic-terrestrial interface with extensive grassland, fruit trees (mango, citrus), and shade trees; relatively undisturbed and biodiverse	Denser canopy; wetland areas expand; increased herbaceous growth
Ejirin PHC	Dense woodland, tropical rainforest	Semi-natural tropical rainforest ecosystem with layered canopy (canopy, midstory, understory) and high species richness	Full canopy closure; understory dense; fruits/seeds abundant
Solu-Alade PHC	Coastal vegetation	Coconut palms, sparse grasses, and hardy coastal vegetation adapted to marine conditions	More vigorous growth; flowering/fruiting of coastal species
Orimedu PHC	Built-up / degraded coastal vegetation	Highly modified environment dominated by coastal weeds, ornamental plants, and sparse non-native vegetation	Rapid growth of weeds; potential for invasive species spread

Source: Multiple Development Services (2026); Nigerian Conservation Foundation (2019)

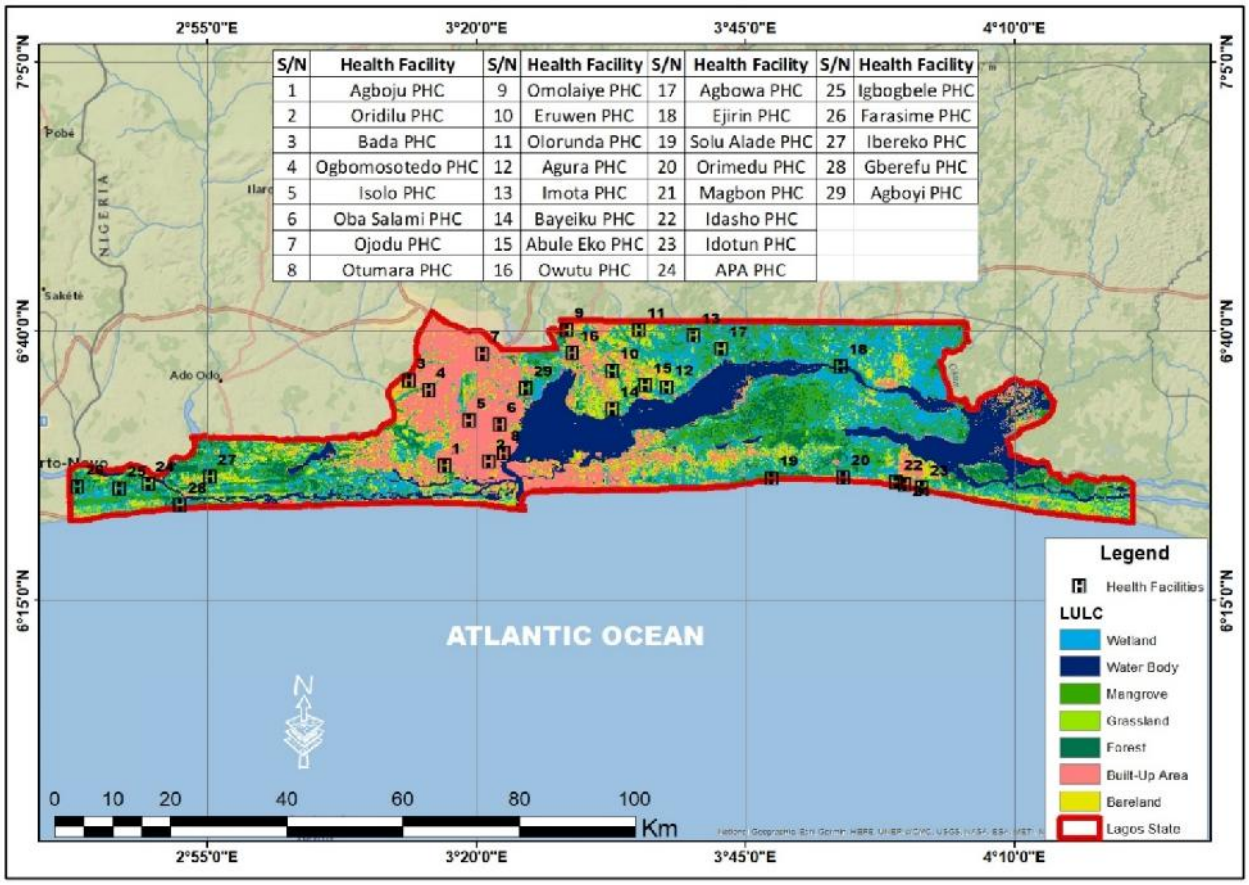


Figure 4.11: Land cover classification map (Sentinel-2)

Source: Multiple Development Services (2026)

4.6.2 Flora

Wet season flora changes include increased foliage density, flowering and fruiting of many species, expansion of aquatic macrophytes in wetlands (e.g., *Eichhornia crassipes* – water hyacinth – in Ejirin wetlands), and accelerated growth of invasive species such as *Chromolaena odorata* (Onadeko & Akinpelu, 2018; LASEPA, 2023).

Table 4.18: Flora – Group 5 (Dry Season Observation)

Scientific Name	Common Name	Type	Habitat	Abundance (Dry Season)	LSHIP Sites
Elaeis guineensis	Oil palm	Tree	Farmland, secondary vegetation	Common	Agbowa, Ejirin
Mangifera indica	Mango	Tree	Farmland, settlements	Common	Agbowa, Ejirin

Cocos nucifera	Coconut	Tree	Coastal areas	Common	Solu-Alade
Terminalia mantaly	Almond / Umbrella tree	Tree	Mixed vegetation	Common	Agbowa
Chromolaena odorata	Siam weed	Shrub (invasive)	Disturbed land	Very common	Most sites
Megathyrsus maximus	Guinea grass	Grass	Grassland/farmland	Very common	Agbowa
Cyperus rotundus	Nut grass	Grass	Wetlands/disturbed soils	Common	Ejirin
Raphia farinifera	Raffia palm	Tree	Wetlands/riverine	Common	Ejirin

Source: Multiple Development Services (2026); Nigerian Conservation Foundation (2019)



Plate 4.8: Coconut trees at Coastal Area of Epe-Ibeju Lekki Axis

Source: Multiple Development Services (2026)

4.6.3 Fauna

Wet season fauna activity increases significantly, particularly for breeding birds, amphibians (frogs and toads become abundant in flooded areas), and insects. Many species use the wet season for reproduction and feeding (Onadeko & Akinpelu, 2018).

Table 4.19: Fauna – Group 5 (Dry Season Observation)

Scientific Name	Common Name	Class	Habitat	Abundance (Dry Season)	Conservation Status	LSHIP Sites

Cricetomys gambianus	Giant rat	Mammal	Farmland, settlements	Common	Least Concern	Most sites
Funisciurus spp.	Squirrel	Mammal	Woodland, settlements	Common	Least Concern	Orimedu
Halcyon senegalensis	Woodland Kingfisher	Bird	Wetlands, farmlands	Common	Least Concern	Ejirin
Bubulcus ibis	Cattle Egret	Bird	Wetlands, grasslands	Common	Least Concern	Ejirin
Ardea cinerea	Grey Heron	Bird	Wetlands/lagoon	Common	Least Concern	Ejirin
Varanus spp.	Monitor lizard	Reptile	Wetlands/coastal areas	Common	Least Concern	Solu-Alade, Orimedu
---	Small mammals, birds	Mixed	Coastal/degraded habitats	Low–Moderate	Not threatened	Solu-Alade, Orimedu

Source: Multiple Development Services (2026); Onadeko & Akinpelu (2018)

4.6.4 Sensitive Ecological Areas

Table 4.20: Sensitive Ecological Areas – Group 5

Sensitive Area	Location	LSHIP Sites Nearby	Ecological Value	Sensitivity (Dry Season)	Sensitivity (Wet Season – Literature)	Protection Status
Agbowa wetlands	Ikosi-Ejinrin (Agbowa)	Agbowa PHC (within/near)	Wetland ecosystem, flood buffering, groundwater recharge	High (dry season refuge)	Very high (peak flood storage, breeding habitat)	Not protected (NESREA regulations apply)

Ejirin riverine system	Ejinrin axis	Ejirin PHC (adjacent)	Riverine ecosystem, fisheries, water transport, biodiversity, habitat	High (low flow)	Very high (peak flow, fish migration/spawning)	Not protected
Solu-Alade wetlands	Ibeju-Lekki	Solu-Alade PHC (near)	Seasonal wetlands, flood regulation, habitat for aquatic species	Medium–High (dry)	High (inundated)	Not protected
Orimedu coastal zone	Eti-Osa coastline	Orimedu PHC (adjacent)	Coastal ecosystem, fisheries, shoreline protection, mangrove potential	High (dry)	Very high (storm surge protection, turtle nesting if present)	Not protected (coastal regulations apply)

Source: Multiple Development Services (2026); Nigerian Conservation Foundation (2019); Lawal-Are (2021)

4.7 Biodiversity (AFDB ISS and OS10)

4.7.1 Biodiversity Screening (AfDB ISS and OS5)

The emphasizes the protection of biodiversity, ecosystem services, and sustainable management of natural resources. OS10 requires projects to avoid or minimize adverse impacts on natural habitats, wetlands, coastal ecosystems, and species of conservation importance through the application of the mitigation hierarchy (avoid–minimize–restore–offset). The safeguard also African Development Bank Integrated Safeguards System (ISS) Operational Safeguard 10 (OS10) promotes the conservation of ecosystem functions and ecological resilience while ensuring that project activities do not contribute to biodiversity loss or

degradation of critical habitats (AfDB, 2023). The Group 5 project sites (Agbowa, Ejirin, Solu Alade, and Orimedu) are situated within wetland, riverine, and coastal ecological zones of Lagos State. Although no Critically Endangered (CR) or Endangered (EN) species were identified during the reconnaissance survey, the presence of wetlands, lagoon systems, and coastal habitats suggests the potential occurrence of migratory birds, aquatic fauna, and other species of conservation significance. Consequently, precautionary biodiversity management measures should be incorporated during project planning, construction, and operational phases to prevent habitat disturbance and maintain ecosystem integrity.

Table 4.21: AfDB OS10 Biodiversity Screening Matrix – Group 5

Criterion	Description	Potential Trigger in Group 5	Assessment Required?
Criterion 1	CR/EN species	None identified	No
Criterion 2	Endemic/restricted range species	None identified	No
Criterion 3	Significant concentrations of migratory birds	Wetlands and coastal areas (Agbowa, Ejirin, Orimedu)	Yes – survey required
Criterion 4	Highly threatened or unique ecosystems	Wetlands and coastal ecosystems (all four sites)	Yes – assessment required
Criterion 5	Key evolutionary processes	None identified	No

Source: AfDB (2023); Multiple Development Services (2026)

Table 4.22: AfDB OS10 Biodiversity Screening by Site – Group 5

Site	Habitat Type	Sensitive Habitat	Migratory Species Potential	Ecosystem Services	Biodiversity Sensitivity	Recommended Action
Agbowa PHC	Wetland/Farmland	Yes	Moderate	Flood regulation, agriculture	High	Maintain wetland buffers and minimise vegetation clearing

Ejirin PHC	Riverine/Wetland	Yes	Moderate–High	Fisheries, water supply	High	Conduct ecological monitoring and protect riparian vegetation
Solu Alade PHC	Seasonal Wetland	Yes	Moderate	Flood attenuation	Moderate–High	Avoid drainage obstruction and preserve wetland functions
Orimedu PHC	Coastal/Marine Interface	Yes	High	Fisheries, shoreline protection	High	Implement coastal protection measures and monitor water quality

Source: Multiple Development Services (2026)

Based on the AfDB Integrated Safeguards System (ISS) OS6 (2024) screening, the four project sites (Agbowa, Ejirin, Solu-Alade, and Orimedu) are classified as Modified Ecosystems. These sites are located within existing government-owned plots surrounded by peri-urban settlements, agricultural farmlands, and coastal community infrastructure. The ecological receptors consist predominantly of secondary regrowth, ruderal vegetation, and degraded wetland fringes influenced by long-term human habitation and land-use changes. Consequently, these areas do not support the high biodiversity values, endemic species, or unique ecological functions required to trigger a Critical Habitat designation. The project will apply standard mitigation measures (30-50 metre wetland buffers and sediment controls) to manage localised ecological impacts, consistent with AfDB OS6 requirements for modified habitats.

The Lagos Lagoon wetland complex supports numerous migratory waterbird species and provides important ecological functions including fisheries production, flood attenuation and

nutrient cycling. Similarly, the coastal environment of Orimedu forms part of the Gulf of Guinea marine ecosystem, which supports marine turtles and other migratory marine fauna. Although nesting sites have not been confirmed within the project footprint, nearby coastal areas have recorded turtle nesting activities, warranting precautionary management during construction activities. Construction works should therefore avoid unnecessary vegetation clearance, minimise noise and night-time lighting near coastal habitats, and prevent sediment or waste discharge into adjacent water bodies.

Under the African Development Bank ISS Operational Safeguard 5, the Group 5 project sites are considered environmentally sensitive because they occur within wetland and coastal ecosystems that provide important biodiversity values and ecosystem services. While no critical biodiversity features are expected to be directly affected by the proposed healthcare facilities, site-specific mitigation measures and ecological monitoring should be implemented to avoid habitat degradation and ensure compliance with AfDB biodiversity conservation. While nesting has not been confirmed at Orimedu, nearby beaches (Lekki, Alpha, La Campagne) have recorded nesting activity (Manes et al., 2021; IUCN, 2023). Therefore, precautionary measures for marine turtles are recommended during construction.

4.7.2 Ecosystem Services Assessment

The ecosystem service classification reveals that Group 5 health facilities are situated within Moderate, High, and Very High ecosystem service zones, reflecting the presence of ecologically significant land cover types such as wetlands, forests, water bodies, and mangrove ecosystems. Ejirin PHC, located within a grassland and water body environment, falls within the Moderate ecosystem service class, where ecological functions are primarily associated with habitat support and water-related services.

Agbowa PHC is situated within a wetland and forest environment and is therefore classified within the High ecosystem service class. The surrounding ecosystems provide important regulating and supporting functions, including carbon sequestration, flood regulation, biodiversity conservation, and water purification.

In contrast, Solu Alade PHC and Orimedu PHC are located within mangrove-dominated environments and consequently belong to the Very High ecosystem service class. Mangrove ecosystems provide exceptional ecological functions, including shoreline protection, carbon storage, climate regulation, nursery habitats for aquatic species, and biodiversity support.

Overall, Group 5 is classified as a High to Very High Ecosystem Service Group. From an Environmental Impact Assessment (EIA) perspective, the high ecological value of the surrounding wetlands and mangrove ecosystems contributes significantly to environmental

quality and resilience. However, these ecosystems are environmentally sensitive and vulnerable to degradation resulting from urban encroachment, pollution, and unsustainable land-use practices. Therefore, their conservation and sustainable management are essential to maintaining ecosystem integrity and ensuring the long-term sustainability of healthcare infrastructure and service delivery within Group 5.

Table 4.23: Ecosystem Services Assessment – Group 5

Service	Description	Dependence of Local Communities (Dry Season)	Wet Season Variation	LSHIP Impact	Mitigation
Farmland	Cassava and maize farming in Agbowa and Ejirin	High (primary source of livelihood and food security)	Peak growing season (May–October)	Land clearing and potential loss of farmland	Minimise land take; compensate affected users where required
Water	Boreholes and river sources, particularly in Ejirin	High (domestic use and small-scale agriculture)	Water availability high (flooding may contaminate)	Increased abstraction and pressure on water resources	Promote water efficiency; monitor abstraction levels
Fisheries	Coastal and riverine fishing in Orimedu and Ejirin	High (income and protein source for households)	Peak fishing season (April–September)	Risk of water pollution from construction activities	Potential sediment and pollutant discharge
Flood Regulation	Wetlands in Agbowa and Solu-Alade	High (natural flood buffering and drainage control)	Maximum flood storage capacity	Disturbance or reduction of wetland areas	Maintain buffer zones (30–50 metres); avoid

					wetland encroachment
Coastal Protection	Shoreline environment in Orimedu	High (protection against erosion and storm surges)	Storm surge risk higher (wet season + tidal)	Loss of vegetation cover due to site clearing	Maintain coastal buffer; implement revegetation measures

Source: Multiple Development Services (2026); Nigerian Conservation Foundation (2019)

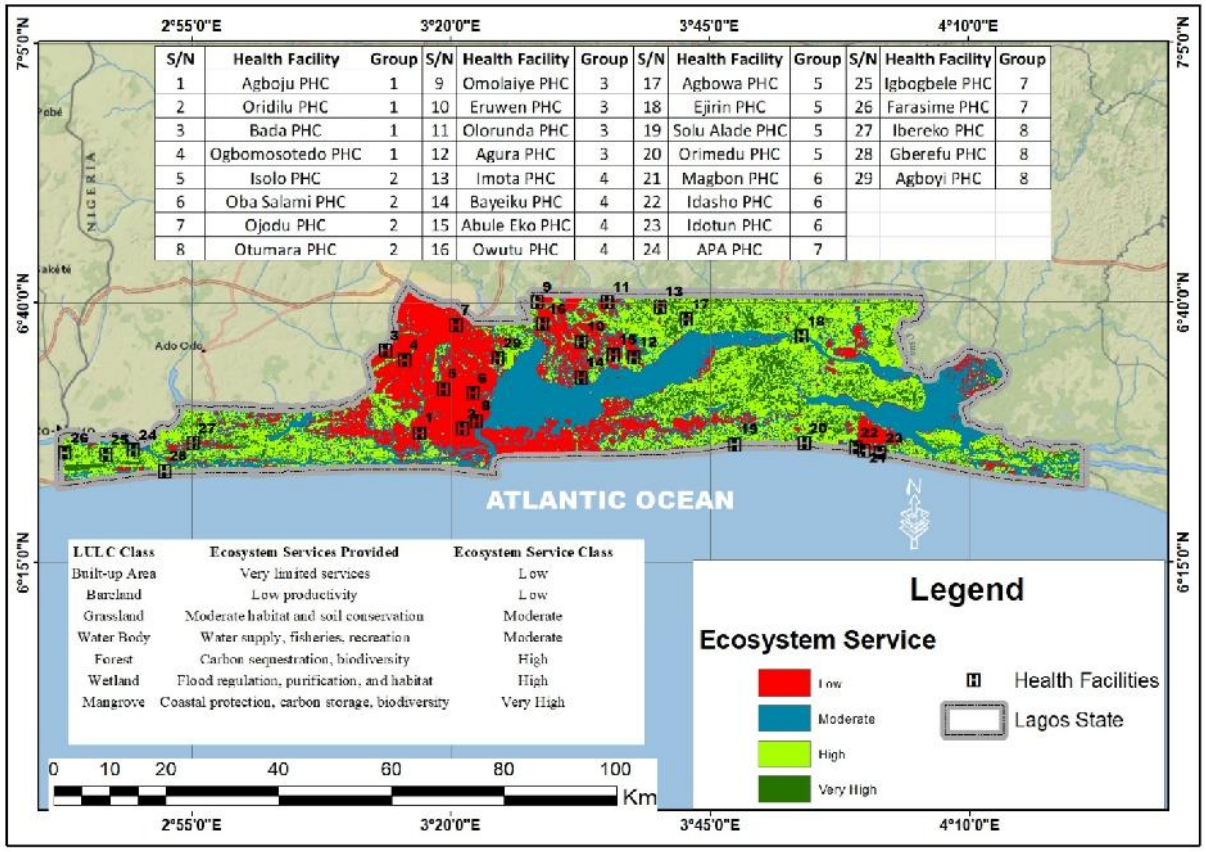


Figure 4.12: Map showing farmland, water sources, fishing zones, wetlands, coastal areas, and LSHIP sites

Source: Multiple Development Services (2026)

4.8 Socio-Economic and Cultural Environment

This section presents the socio-economic and cultural baseline for the Epe/Ibeju-Lekki Axis Group 5, encompassing the four PHC facilities—Agbowa, Ejirin, Solu-Alade, and Orimedu. The assessment covers demographics, livelihoods, land tenure, social services, cultural heritage, vulnerable groups, GBV/SEA/SH risks, and security context. The analysis establishes the pre-project socio-economic baseline against which potential impacts will be evaluated in

accordance with AfDB Operational Safeguards (OS2, OS4, OS5, OS7, OS10) and FMEnv requirements.

4.8.1 Socio-Economic Overview of Epe/Ibeju-Lekki Axis

4.8.1.1 Brief History and Context

Epe and Ibeju-Lekki are historic settlements in Lagos State with a rich legacy linked to early trade, migration, lagoon navigation, and coastal interaction. They developed as important settlements due to their strategic positions along the Lekki Lagoon and Atlantic coastline, which facilitated commerce, fishing, maritime transport, and contact with neighbouring communities.

During the pre-colonial era, the axis served as a significant trade corridor and cultural contact zone. In the colonial and post-independence periods, Epe and Ibeju-Lekki have evolved significantly, transitioning from traditional fishing and agrarian economies into critical hubs for regional commerce, real estate expansion, industrial development, and infrastructural growth.

Location and Strategic Importance: The Epe/Ibeju-Lekki Axis is located in the eastern/coastal corridor of Lagos State, bordering the Atlantic Ocean to the south and the Lekki Lagoon to the north. The area encompasses extensive wetland, coastal, and lagoon ecosystems. The axis is strategically connected via major regional highways and waterways, positioning it as a rapidly developing economic zone in Lagos State.

Population and Demographics: The axis has a growing and diverse population composed primarily of indigenous Ijebu-Yoruba subgroups, alongside a significant influx of economic migrants, workers, and traders from other parts of Nigeria. Rapid urbanization and industrial developments along the corridor have substantially increased local populations and heightened the demand for healthcare, potable water, accessible roads, and social infrastructure.

Traditional Leadership and Governance:

The area maintains a strong traditional leadership structure comprising traditional rulers (Obas), local chiefs, Baales, and community heads who play vital roles in:

- Land administration
- Dispute resolution
- Stakeholder engagement
- Community mobilisation

For ESIA purposes, the traditional rulership institution in Epe and Ibeju-Lekki is a key socio-cultural stakeholder, especially in community engagement, project acceptance, and conflict management.

4.8.1.2 Comparative Socio-Economic Baseline by Community

The socio-economic baseline varies significantly across the four communities hosting the project facilities due to differences in location, access to resources, and economic activities (Table 4.24).

Table 4.24: Comparative Socio-Economic Baseline – Project-Affected Communities

Parameter	Agbowa	Ejirin	Solu-Alade	Orimedu
Location Context	Lagoon-side settlement	Riverine/lagoon-side historic town	Coastal/wetland-adjacent settlement	Coastal/Atlantic-facing settlement
Estimated Population	10,000 – 20,000	8,000 – 15,000	6,000 – 12,000	10,000 – 25,000
Settlement Type	Semi-urban/riverine	Historic semi-urban/riverine	Rural/coastal-wetland	Fast-growing coastal/semi-urban
Dominant Ethnic Group	Yoruba (Ijebu subgroup)	Yoruba (Ijebu subgroup)	Yoruba (Ibeju-Epe mix)	Yoruba (Ibeju-Epe mix)
Other Ethnic Groups	Igbo, Hausa	Igbo, Hausa	Igbo, Hausa	Igbo, Hausa, other regional groups
Main Livelihoods	Fishing, farming, trading	Fishing, trading, marine transport	Fishing, petty trade, coconut processing	Fishing, trading, sand mining, services
Key Economic Feature	Lagoon and agrarian economy	Commercial trading and fishing economy	Coastal fishing and rural economy	Rapidly commercializing coastal economy
Infrastructure Level	Moderate	Low to moderate	Low	Moderate
Road Condition	Mixed (some paved, poor feeder roads)	Poor/flood-prone access corridors	Poor/wet-season constrained tracks	Mixed (regional highway access, poor local streets)
Water Supply Source	Boreholes, public water schemes	Boreholes, shallow wells	Boreholes, wells	Boreholes, commercial vendors

Electricity Supply	Irregular grid supply	Irregular grid supply	Irregular grid supply	Irregular grid supply
Drainage Condition	Moderate to poor	Poor	Very poor	Poor to moderate
Environmental Setting	Lagoon-adjacent zone	Riverine/lagoon fringe	Coastal/wetland zone	Atlantic coastal/sandy shore zone
Key Environmental Issue	Lagoon flooding and erosion	Seasonal flooding and high water table	Wetland degradation and coastal hazards	Coastal erosion and sea-level rise vulnerability
Traditional Leadership	Baale/Oba chieftaincy structure	Oba/Baale chieftaincy structure	Baale/chieftaincy structure	Baale/Oba chieftaincy structure
Development Pressure	Medium	Medium	Medium to high	High (due to Lekki-Epe corridor growth)

4.8.2 Socio-Economic Receptors Analysis

4.8.2.1 Population Receptors

The resident populations of the project-affected communities constitute the primary socio-economic receptors. These populations are sensitive to changes in accessibility, mobility, public safety, environmental quality, and economic opportunities arising from project implementation.

Key Sensitivities:

- Solu-Alade and Orimedu, with their coastal and wetland exposure, are particularly sensitive to temporary disruptions in road access, flooding, noise, and construction disturbances.
- A large share of residents depend on local roads and services daily.
- Population density is high in Orimedu and Agbowa, moderate in Ejirin, and low to moderate in Solu-Alade.

Overall Sensitivity: Population receptors are assessed as HIGH SENSITIVITY, particularly during the construction phase.

4.8.2.2 Livelihood Receptors

Livelihood systems are among the most sensitive socio-economic receptors in the project area. Economic activities include fishing, farming, petty trading, transport services, and artisan work,

all of which depend on stable access to land, roads, markets, and environmental resources (Table 4.25).

Table 4.25: Livelihood Receptors by Community

Community	Key Livelihoods	Sensitivity Drivers
Agbowa	Fishing, farming, trading	Access restrictions, lagoon sensitivity, potential disruption to marine-related and agricultural activities
Ejirin	Fishing, trading, marine transport	Riverine sensitivity, access disruption, trade route dependence
Solu-Alade	Fishing, petty trade, coconut processing	Wetland sensitivity, coastal flooding, access disruption, livelihood dependence on natural resources
Orimedu	Fishing, trading, sand mining, services	Construction disturbance, access constraints, commercial customer patronage reduction

Key Observations:

- Households depend on daily income-generating activities.
- Fishing is a primary livelihood across Agbowa, Ejirin, and Solu-Alade.
- Trading and commercial activities dominate in Orimedu.
- Trading is important across all four communities.

Overall Sensitivity: Livelihood receptors are assessed as **HIGH SENSITIVITY**, requiring careful planning to minimise economic disruptions and restore affected livelihoods where necessary.

4.8.2.3 Community Infrastructure Receptors

Community infrastructure represents another important category of socio-economic receptors, including roads, water supply systems, drainage facilities, electricity networks, schools, health centres, markets, and transport routes (Table 4.26).

Table 4.26: Community Infrastructure Receptors

Community	Infrastructure Level	Sensitivity Drivers
Agbowa	Moderate	Moderate sensitivity – poor feeder roads and drainage increase vulnerability
Ejirin	Low to moderate	High sensitivity – flood-prone access corridors

Solu-Alade	Low	Very high sensitivity – wetland setting and limited infrastructure alternatives
Orimedu	Moderate	Moderate to high sensitivity – heavy traffic on regional corridors alongside poor local connections

Key Observations:

- Road infrastructure is especially sensitive as it supports economic mobility, access to services, and social interaction.
- Temporary obstruction of roads or access routes during construction may significantly affect communities with already poor connectivity.
- Solu-Alade and Ejirin exhibit the highest infrastructure sensitivity due to wetland and coastal constraints.

Overall Sensitivity: Community infrastructure receptors are assessed as **MODERATE TO HIGH SENSITIVITY**, depending on baseline condition in each community.

4.8.2.4 Vulnerable Groups as Receptors

Vulnerable groups within the project area include women, children, the elderly, persons with disabilities, low-income households, and informal economic operators. These groups are often more susceptible to adverse project impacts because they have fewer resources and reduced coping capacity (Table 4.27).

Table 4.27: Vulnerable Groups and Sensitivity Drivers

Vulnerable Group	Sensitivity Drivers
Women (petty traders)	Income loss if access to markets is disrupted
Children	Construction-related traffic and safety risks
Elderly & Persons with Disabilities	Mobility challenges where construction restricts access to roads and social services
Low-income households	Vulnerable to economic shocks from temporary displacement or reduced business opportunities

Overall Sensitivity: Vulnerable groups are classified as HIGH SENSITIVITY, and project planning must ensure that mitigation measures explicitly address their needs.

4.8.2.5 Environmental Resource Receptors

Environmental resources that support socio-economic wellbeing—such as farmland, wetlands, drainage channels, and water bodies—are key receptors within the project area (Table 4.28).

Table 4.28: Environmental Resource Receptors

Community	Environmental Resources	Sensitivity Drivers

Agbowa	Wetlands, lagoon resources	Extremely sensitive – underpin fisheries-based livelihoods and local environmental stability
Ejirin	Riverine and lagoon resources	Sensitive to disturbance, water pollution, and disruption of aquatic pathways
Solu-Alade	Wetlands, coastal resources	Sensitive to wetland disturbance, pollution, and coastal erosion risks
Orimedu	Coastal environment, sandy shores, vegetation	Sensitive to coastal development, land take, and physical disturbance

Overall Sensitivity: Environmental resource receptors are assessed as **HIGH SENSITIVITY**, particularly in communities where natural resources directly sustain livelihoods.

4.8.2.6 Social and Cultural Institution Receptors

Traditional leadership institutions, community associations, religious centres, and social networks serve as social receptors that maintain cohesion and facilitate community governance (Table 4.29).

Table 4.29: Social and Cultural Institution Receptors

Community	Traditional Leadership
Agbowa	Baale/Oba chieftaincy structure
Ejirin	Oba/Baale chieftaincy structure
Solu-Alade	Baale/chieftaincy structure
Orimedu	Baale/Oba chieftaincy structure

Key Observations:

- These institutions are highly influential in community mobilisation and stakeholder engagement.
- Disruption of community relations, inadequate consultation, or perceived exclusion of these institutions could generate resistance, mistrust, or social conflict.

Overall Sensitivity: Social institutions are considered MODERATE SENSITIVITY, but their strategic importance is high because they influence community acceptance of the project and the effectiveness of grievance redress processes.

4.8.2.7 Summary of Receptor Sensitivity

Table 4.30 provides a Summary of Socio-Economic Receptor Sensitivity.

Table 4.30: Summary of Socio-Economic Receptor Sensitivity

Receptor Category	Sensitivity Level	Basis of Sensitivity
Population Receptors	High	Dense populations; limited alternatives; dependence on local infrastructure
Livelihood Receptors	High	Heavy dependence on fishing, farming, trading; income generated daily
Community Infrastructure Receptors	Moderate–High	Existing deficits; poor drainage; limited access routes
Vulnerable Groups	High	Limited adaptive capacity; dependence on PHC services and daily income
Environmental Resource Receptors	High	Dependence on natural resources for livelihoods; wetland and coastal vulnerability
Social/Cultural Institutions	Moderate	Importance for community engagement; risk of resistance if excluded

4.8.2.8 Community Sensitivity Ranking

Table 4.31 provides a summary of the Community Sensitivity Ranking – Epe/Ibeju-Lekki Axis.

Table 4.31: Community Sensitivity Ranking – Epe/Ibeju-Lekki Axis

Community	**Overall Sensitivity**	**Key Drivers**
Solu-Alade	Very High	Wetland exposure, weak infrastructure, livelihood dependence on natural resources, coastal hazards
Ejirin	Very High	Riverine vulnerability, flood-prone access, historical building constraints
Orimedu	High	Rapid development pressure, coastal erosion/sea-level rise vulnerability, heavy traffic corridors
Agbowa	Moderate–High	Lagoon proximity, access sensitivity, community infrastructure limitations

Implications for Project Design: The socio-economic receptors within the Epe/Ibeju-Lekki Axis Group 5 are moderately to highly sensitive, emphasizing the need for:

- **Careful construction planning** – to avoid temporary disruptions.
- **Targeted stakeholder engagement** – with Obas, Baales, community leaders, women's groups, and youth.
- **Livelihood protection measures** – for fishers, farmers, traders, and transporters.

- **Vulnerable group safeguards** – for children, elderly, women, and persons with disabilities.
- **Environmental resource protection** – especially for Solu-Alade's wetland setting, Orimedu's coastal frontage, and Agbowa/Ejirin's lagoon ecosystems.

4.8.3 Human Settlements

Table 4.32: Human Settlements – Group 5

Site	Settlement Type	Population Density	Description
Agbowa PHC	Peri-urban	Medium	Agrarian community, low-income households
Ejirin PHC	Semi-rural	Low	Riverine settlement, dispersed population
Solu-Alade PHC	Peri-urban	Medium	Growing residential layouts, small-scale trade
Orimedu PHC	Coastal peri-urban	Medium	Fishing and mixed residential development

Source: Multiple Development Services (2026); National Population Commission (2023)

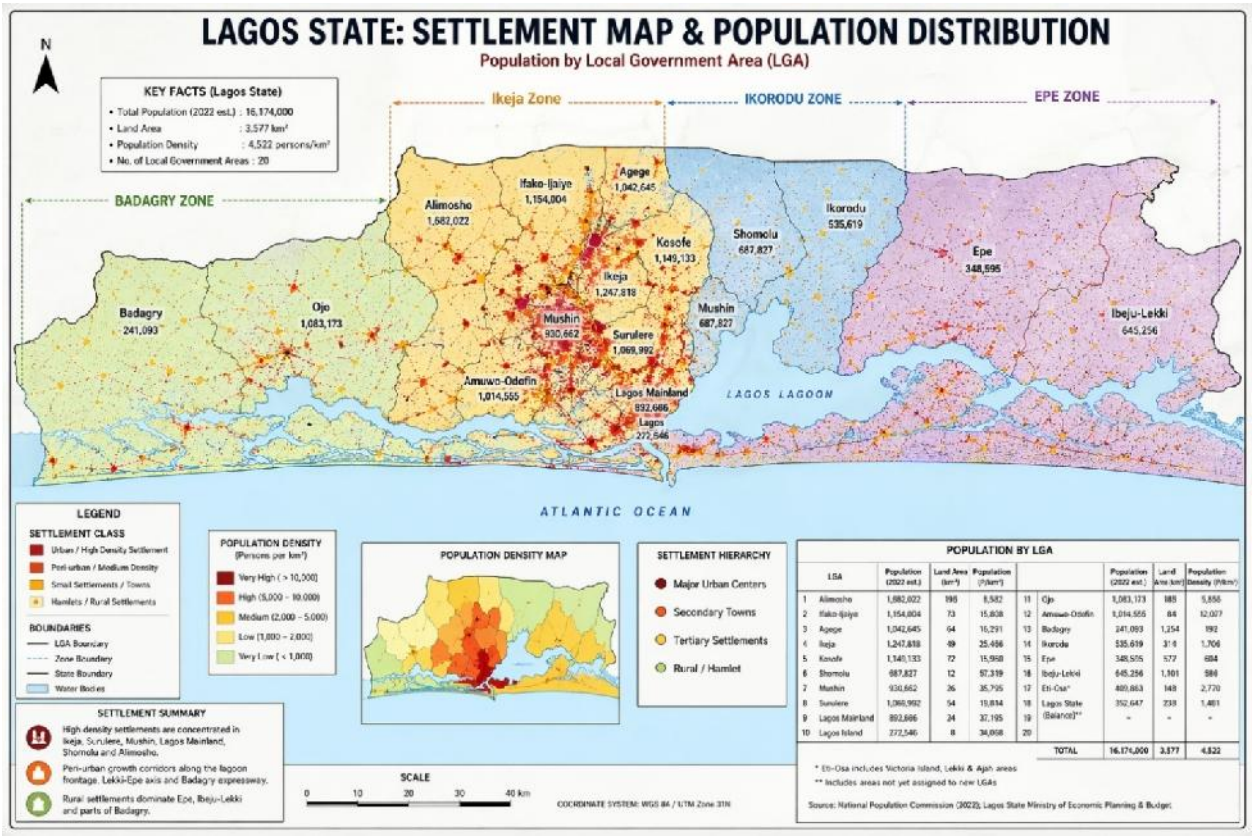


Figure 4.13: Settlement map and population data

Source: Multiple Development Services (2026)

4.8.3 Demographics

Table 4.33: Demographics – Epe/Ibeju-Lekki Axis (estimated)

Parameter	Value (Estimate)	Source
Population (catchment)	200,000 – 400,000 (4 PHCs)	Consultant estimate (2026)
Population growth rate	3–4% per year	National Population Commission (2023)
Gender ratio (female:male)	0.98:1 (estimated)	National Population Commission (2023)
Age structure – youth (<18)	35–40%	National Population Commission (2023)
Age structure – working age (18–64)	55–60%	National Population Commission (2023)
Age structure – elderly (≥65)	3–5%	National Population Commission (2023)
Household size	4–6 persons	National Population Commission (2023)
Literacy rate	80–90% (urban/peri-urban), 60–70% (rural)	National Bureau of Statistics (2022)

Source: Multiple Development Services (2026); National Population Commission (2023); National Bureau of Statistics (2022)

4.8.4 Livelihoods

Table 4.34: Livelihoods and sources of income – Group 5

Site	**Primary Livelihoods**	**Secondary Livelihoods**	**Vulnerability (Dry Season)**	**Wet Season Variation**
Agbowa PHC	Farming	Trading	Medium	Peak farming activity (May–October)
Ejirin PHC	Farming, fishing	Trading	Medium	Fishing peak (April–September); farming peak
Solu-Alade PHC	Trading	Farming	Low	Trading slows (rainy season access problems)

Orimedu PHC	Fishing	Trading	Medium	Fishing peak (April–September)

Source: Multiple Development Services (2026)

4.8.5 Education, Literacy, and Skills

Education and Literacy:

Parameter	**Value**
Overall Literacy Rate	70% (formal education)
Primary/Secondary Schools	Agbowa Community High School, Ejirin Primary School, Solu-Alade/Orimedu community schools
Vocational Skills	Skewed towards boat building, net making, traditional agriculture, coconut processing, and artisanal crafts

Skills Profile:

- Boat building and repair (Agbowa, Ejirin)
- Net making and fishing gear maintenance (Agbowa, Ejirin, Solu-Alade)
- Traditional agriculture and farming (Agbowa, Solu-Alade)
- Petty trading, commerce, and coconut processing (all sites)
- Artisanal crafts (mat/basket weaving, Orimedu, Solu-Alade)

Implications:

- Limited formal education beyond primary level in some coastal communities
- Vocational skills tied to natural resource-based livelihoods
- Need for skills training and capacity building as part of livelihood restoration

4.8.6 Social Organisations and Institutions

Traditional Institutions:

Community	**Institution**	**Role**
Agbowa	Palace of the traditional ruler / Baale structure	Traditional governance, cultural leadership, dispute resolution
Ejirin	Royal stool / Chieftaincy structure	Community leadership, land administration, cultural guidance
Solu-Alade	Baale/Chieftaincy structure	Community leadership, cultural guidance, dispute resolution
Orimedu	Traditional stool / Chieftaincy structure	Community leadership, cultural guidance, dispute resolution

Community-Based Organizations:

- Women's groups and associations (all sites)
- Youth associations (all sites)
- Fisher and trader associations (Agbowa, Ejirin, Solu-Alade, Orimedu)
- Ward Health Committees (all sites)
- Community Development Associations (CDAs) (all sites)

Religious Institutions:

- Churches and mosques present in all communities
- Traditional religious sites and cultural shrines in some areas

Implications for Project:

- Strong traditional institutions facilitate community engagement and project acceptance
- Women's and youth groups provide important channels for stakeholder engagement
- Fisher and trader associations are critical for livelihood protection and GRM

4.8.7 Gender and Social Inclusion

Gender Profile:

Parameter	**Value**
Gender Ratio (Female:Male)	0.99:1
Women in Workforce	Active in petty trading, fish processing, farming, and artisanal work
Female-Headed Households	Present, particularly in fishing and coastal communities (widows/separated)
Access to Healthcare	Women face barriers (cost, transport, childcare, lack of female staff)

Social Inclusion Considerations:

Group	**Considerations**
Women	• Primary caregivers and healthcare users • Active in informal economy (trading, fish processing) • Barriers to healthcare access (cost, transport, safety)
Youth	• Form 35–40% of population • High unemployment (~18%) • Limited formal employment opportunities
Elderly	• 3–5% of population • Mobility challenges

	• Dependence on family and community support
Persons with Disabilities	• Limited accessible infrastructure • Challenges accessing healthcare and services
Low-Income Households	• Vulnerable to economic shocks • Dependence on daily income-generating activities
Migrants/Trans-Border Workers	• Present along the coastal and lagoon corridors • May face barriers to healthcare and services

4.8.8 Household Economic Valuation and Ecosystem Dependence

Ecosystem Dependence:

Community	**Primary Ecosystem Service**	**% Household Income from Ecosystem**
Agbowa	Fisheries (lagoon), flood regulation, water supply	>60% directly from lagoon ecosystem
Ejirin	Fisheries (riverine/lagoon), flood regulation, water supply	>60% directly from riverine/lagoon ecosystem
Solu-Alade	Fisheries, farmland, wetland resources, flood regulation	>60% directly from wetland ecosystem
Orimedu	Fisheries (Atlantic/coastal), farmland, water supply	>50% directly from coastal/agricultural ecosystem

Key Markets:

- Agbowa Central Market – primary trading hub for Agbowa
- Ejirin Historic Market – local trading, marine commerce, and petty trade
- Solu-Alade Local Market – local trading and petty commerce
- Orimedu Coastal Market – primary fish and commercial market for Orimedu

Implications:

- Over 60% of household income in Solu-Alade and Agbowa is directly derived from the aquatic and wetland ecosystems (predominantly fisheries, farming, and coconut processing).
- Protection of lagoon and coastal water quality is critical to economic survival.
- Construction activities must avoid polluting water bodies or disrupting access to fishing grounds and local markets.

4.8.9 Security, Conflict, and Social Stability

Security Profile:

Parameter	Assessment
Overall Security	Low to moderate risk
Social Stability	High – reinforced by strong traditional institutions
Civil Conflict	Historically low
Security Challenges	• Minor localized security considerations near coastal corridors • Poor lighting in some remote areas • Isolated access pathways • Limited local policing capacity in remote settlements

Security Measures:

Site	Risk Level	Description	Mitigation
Agbowa	Medium	Lagoon access; movement around waterfront edge	Guards; fencing; lighting; community liaison
Ejirin	Medium	Riverine interface and historic layout	Guards; fencing; lighting
Solu-Alade	Medium	Wetland/peri-rural interface	Guards; fencing; lighting
Orimedu	Low to Medium	Rapidly developing coastal settlement	Guards; fencing; lighting

Social Stability Factors:

- Strong traditional leadership (Obas, Baales) provides governance and dispute resolution.
- Community associations (CDAs, women's groups, youth groups) support social cohesion.
- Commercial and transit activities along the regional corridors occasionally introduce transient populations but do not affect core social stability.
- Civil conflict is historically low.

4.8.10 Land Tenure and Ownership

Table 4.35: Land Tenure and Ownership

Site	Tenure Type	Evidence	Implications
Agbowa	Government Owned / Gazetted Land	Verified Government Ownership / Technical Selection Records	Low risk of land-title disputes; facilitates immediate project commencement without need for RAP

Ejirin	Government Owned / Gazetted Land	Verified Government Ownership / Site Gazetting	Secure tenure ensures long-term project sustainability and prevents legal delays associated with communal land claims
Solu-Alade	Government Owned / Gazetted Land	Verified Government Ownership / Existing PHC Status	Use of an established social landmark minimizes community friction and ensures stability for local healthcare access
Orimedu	Government Owned / Gazetted Land	Verified Government Ownership / Site Gazetting	Secure tenure ensures long-term project sustainability and prevents legal delays associated with communal land claims

Key Observations:

- All four sites are government-owned and gazetted.
- No tenure disputes anticipated.
- No physical displacement (demolition of housing) required.
- Formal documentation required where community land donation occurred (if applicable).

4.8.11 Resettlement Baseline (AfDB OS5)

Key Finding: No Physical Displacement Required

The resettlement baseline screening confirms:

Parameter	**Finding**
Physical Displacement	None – zero residential structures affected
Economic Displacement	None – informal vendors, roadside traders, waterfront fish processors may face temporary access disruption during construction
Land Acquisition	Not required – all land parcels are government-owned and gazetted
PAPs	No Project-Affected Persons requiring physical relocation or livelihood restoration support

4.8.12 Social Services, OHS and Waste Management

Social Services Baseline

Social services across the Epe/Ibeju-Lekki Axis Group 5 are available but uneven in quality, especially in coastal and wetland communities. LSHIP interventions will improve healthcare

delivery and indirectly strengthen water, energy, road access, and waste management systems. The social amenities available in each of the locations are shown in Table 4.36.

Table 4.36: Social Services Baseline

Service	Availability	Gaps Identified	LSHIP Contribution
Markets	Agbowa Central Market; Ejirin Historic Market; Solu-Alade Local Market; Orimedu Coastal Market	Lack of basic health posts within market clusters for immediate first aid or health screening	Improved proximity to modernised healthcare for market traders and patrons; potential for mobile health outreach
Health Centres	Primary Health Centres (PHCs) established in Agbowa, Ejirin, Solu-Alade, and Orimedu	Lack of consultation privacy, rising damp, roofing decay, inadequate facilities	Total revitalization and expansion; construction of smart clinic facilities; on-site staff housing
Schools	Primary and secondary schools within 1–5 km	Limited formal access in some areas within the project locations; structural limitations; limited synergy between school health programs and PHCs	Strengthening of referral network between schools and modernised PHCs for school health checks and immunisation
Water Sources	Existing manual boreholes or shallow wells across the 4 locations	Frequent non-functionality or contamination risks; insufficient capacity for medical-grade hygiene	Installation of dedicated solar-powered water systems with treatment facilities to ensure safe, constant WASH services
Electricity	Connection to the national grid present but highly erratic across the 4 locations	Frequent outages compromise vaccine cold-chains; preclude evening/emergency operations	Deployment of off-grid Solar PV systems to ensure 24/7 power for critical medical equipment and lighting

Roads	Primary access via regional highways and connecting corridors for the 4 locations	Rural and coastal access roads to PHC sites narrow, unpaved, flood-prone	Advocacy for site-access improvements; better emergency transport visibility
Waste Collection	Reliance on makeshift pits or rudimentary disposal across the 4 locations	Significant biohazard risks; inadequate medical waste segregation; unsafe disposal methods	Implementation of standardized medical waste management infrastructure; secure bins; safe on-site treatment systems

OHS and Waste Streams

The occupational health and safety (OHS) profile and waste-generation characteristics of the Group 5 facilities reflect their typology as small rural and coastal Primary Healthcare Centres with limited clinical services, basic infrastructure, and modest daily operations. Agbowa PHC (new construction), Ejirin PHC (refurbishment), Solu-Alade PHC (refurbishment), and Orimedu PHC (new construction) all operate at a scale typical of PHCs in Lagos State, and therefore exhibit predictable, low-intensity OHS risks and small-volume waste streams consistent with such facilities. Table 4.37a and Table 4.37b summarise the baseline conditions across the four locations. These ranges reflect the operational realities of these PHCs and provide a realistic understanding of the OHS and waste-generation environment within the axis. The facilities do not generate the scale or complexity of risks associated with general hospitals, and the baseline conditions are inherently limited and proportionate to the facility typology and project scope.

Table 4.37a: Occupational Health & Safety Baseline

Facility	Project Type	Typical OHS Risk Types	Indicative Magnitude (Facility-Scale)
Agbowa PHC	New Construction (Elevated Platform)	- Routine clinical handling - Minor sharps management - Slip/fall hazards - Chemical exposure (disinfectants) - Electrical safety	- Low-intensity clinical risks - Small construction crew (10–20 workers) - Moderate construction-specific

		- Heat stress - Construction-specific risks: working at height, dust/noise, machinery operation	hazards typical of PHC-scale works
Ejirin PHC	Refurbishment	- Routine clinical handling - Minor sharps management - Manual lifting - Slip/fall hazards - Chemical exposure - Electrical safety - Refurbishment risks: dust inhalation, trip hazards, minor demolition debris, legacy asbestos management	- Low-intensity clinical risks - Small refurbishment team (5–10 workers) - Localised, low-risk refurbishment activities
Solu-Alade PHC	Refurbishment	- Routine clinical handling - Minor sharps management - Manual lifting - Slip/fall hazards - Chemical exposure - Electrical safety - Refurbishment and asbestos abatement risks	- Low-intensity clinical risks - Small refurbishment team - Limited structural intervention
Orimedu PHC	New Construction (Elevated Platform)	- Routine clinical handling - Minor sharps management - Slip/fall hazards - Chemical exposure - Electrical safety - Heat stress - Construction-specific risks: working at height, coastal foundation works, dust/noise	- Low-intensity clinical risks - Small construction crew (10–20 workers) - Moderate construction-specific hazards typical of coastal PHC works

Table 4.37b: Waste Stream Baseline

Waste Type	Agbowa PHC	Ejirin PHC	Solu-Alade PHC	Orimedu PHC	Basis for Indicative Values
General Waste	5–15 kg/day	5–10 kg/day	5–10 kg/day	5–15 kg/day	Typical PHC administrative & domestic waste
Infectious Healthcare Waste	2–5 kg/day	2–4 kg/day	2–4 kg/day	2–5 kg/day	Outpatient services, immunization, minor procedures
Sharps Waste	0.1–0.3 kg/day	0.1–0.2 kg/day	0.1–0.2 kg/day	0.1–0.3 kg/day	Limited injection/testing activities
Pharmaceutical Waste	<1 kg/month	<1 kg/month	<1 kg/month	<1 kg/month	Small drug inventories typical of rural/coastal PHCs
Construction Waste	1–3 tonnes total	N/A	N/A	1–3 tonnes total	PHC-scale new construction footprint
Refurbishment Waste	N/A	0.5–1 tonne total	0.5–1 tonne total	N/A	Tiles, fittings, minor concrete debris, and legacy material removal

4.8.13 Cultural Heritage

The Epe/Ibeju-Lekki Axis Group 5 is rich in historical, cultural, and spiritual significance, with several traditional landmarks located in the vicinity of the project sites. The table below outlines identified cultural heritage assets and recommended mitigation protocols.

Table 4.38: Cultural Heritage Assets and Mitigation

Site	Heritage Type	Description	Distance to Project Site	Significance	Protection Status	Recommended Action

Agbowa	Tangible / Institutional	Palace of the traditional ruler and ancient community shrines	Within 500m – 1km	High; Central to community's traditional governance and spiritual identity	Protected by Traditional Authority / Local Custom	Conduct formal consultation with traditional leadership; ensure construction does not obstruct access
Ejirin	Tangible / Historical	Historic market squares and sacred shrines	Within 500m	High; Core to town's historical and trading heritage	Protected by Community Leadership / Traditional Custodians	Define clear site boundaries; implement buffer zones to prevent encroachment
Solu-Alade	Tangible / Spiritual	Ancestral shrines and sacred groves	Within 250m – 500m	High; Sacred spaces for local spiritual practices and ancestral veneration	Protected by Community Leadership / Traditional Custodians	Establish strict buffer zones; prevent any disturbance during civil works

Orimedu	Tangible / Spiritual	Traditional altars and sacred community features	Within 250m	Medium-High; Local landmarks used for community rituals	Protected by Local Custom	Brief site contractors on the sanctity of these features; prohibit unauthorized entry
All Sites	Archaeological (Sub-surface)	Potential for historical trade or artifact deposits	Underneath project sites	High; Scientific and historical value	National Commission for Museums & Monuments (NCMM)	Implement a Chance Find Procedure; cease work and notify authorities if artifacts are discovered

Key Observations:

- Reconnaissance confirmed no cultural heritage sites within 100 m of any PHC.
- Heritage sites are located at distances of 250m to 1km from project footprints.
- Excavation may uncover chance finds, requiring strict adherence to the project's Chance Finds Procedure.
- Traditional leadership and custodians play critical roles in heritage protection.

Chance Finds Procedure: In the event of chance finds during excavation:

- Stop work immediately in the area of the discovery.
- Secure the site and prevent further disturbance.
- Notify the National Commission for Museums and Monuments (NCMM) and PIU within 24 hours.
- Allow assessment by heritage authorities before any further work.
- Document the find with photographs and GPS coordinates.

4.8.14 Vulnerable Groups (AfDB OS7 / IFC PS7)

Key Finding: No Indigenous Peoples Identified

Under AfDB OS7 and IFC PS7 screening, no Indigenous Peoples as defined by those standards are identified in the Epe/Ibeju-Lekki Axis Group 5. Therefore, OS7/PS7 is NOT TRIGGERED.
Vulnerable Groups Present:

Group	Vulnerability Factors	Mitigation Measures
Women	Economic dependence on daily trading/fishing; barriers to healthcare access; GBV risks	Gender-sensitive design; GBV Action Plan; livelihood support; female GRM focal points
Children	Traffic risks during construction; child labour risks	Traffic Management Plan; prohibition of child labour in contracts
Elderly	Mobility challenges; healthcare access barriers	Disability-friendly design; accessible facilities
Persons with Disabilities	Limited accessible infrastructure	Universal design standards; ramps; accessible toilets
Low-Income Households	Economic shocks from temporary disruption	Livelihood Restoration Plan; income support
Migrants/Workers	Barriers to healthcare and services	Inclusive engagement; referral pathways

4.8.15 GBV/SEA/SH Baseline

GBV risks are elevated across coastal and peri-urban sites due to poor lighting, isolated paths, weak reporting systems, and economic vulnerability.

Table 4.39: Key GBV Risk Factors

Risk Factor	Description	Sites	Risk Level
Labour Influx	120–240 workers during construction	All sites	Medium
Poor Lighting	Inadequate street lighting	Rural/peri-urban	Medium–High
Isolated Paths	Unlit footpaths in rural areas	Rural/peri-urban	Medium–High
Lack of Female Staff	Few female workers in construction	All sites	Medium
No Confidential Reporting	No GBV channels or survivor support	All sites	High

Economic Vulnerability	Women traders/fishers/farmers	Solu-Alade, Ejirin	Medium–High
Substance Abuse	Alcohol/drug use in some localities	Some localities	Medium
Cultural Norms	Gender inequality in rural areas	Rural sites	Medium
Weak Police Response	Underreporting due to poor response	All sites	High
Displacement	PAPs or livelihood users affected	Site-specific	Medium

Table 4.40: GBV Risk Rating by Site

Site	Overall Risk
Solu-Alade	Medium–High
Ejirin	Medium–High
Orimedu	Medium–High
Agbowa	Medium

Key Risk Scenarios:

- **Worker-Community SEA:** Workers offering money/goods/jobs for sex (highest at rapid development zones like Orimedu due to labour influx).
- **Worker-Worker SH:** Quid pro quo harassment in the workplace.
- **GBV Against Vulnerable Groups:** Women/girls on isolated paths (poor lighting is a common factor).
- **Child Sexual Abuse:** Zero tolerance – CoC prohibition on sexual activity with minors.
- **Lack of Confidential Reporting:** Survivors fear retaliation.
- **Economic Exploitation:** Vulnerability to SEA for fishers/traders across coastal communities.
- **Survivor Reports but No Action:** GRM fails to respond leading to re-traumatisation.

GBV Action Plan:

A comprehensive GBV/SEA/SH Action Plan is provided in Chapter 9, addressing prevention, response, reporting channels, referral pathways, and monitoring.

4.9 Climate Baseline

4.9.1 Historical Climate (1990–2024)

Table 4.41: Historical Climate Trends (1990–2024) – Lagos State

Parameter	Historical Trend (1990–2024)	Source

Temperature	Increase of approximately 0.5–1.0°C over the period, with higher average temperatures recorded in recent decades	NIMET (2024)
Hot Days (>35°C)	Increased frequency and duration of heat events	NIMET (2024)
Annual Rainfall	Generally stable, ranging from 1,500–1,800 mm/year, with inter-annual variability	NIMET (2024)
Extreme Rainfall Events	Increased intensity and frequency by approximately 10–20%, contributing to urban flooding	NIMET (2024)
Relative Humidity	Persistently high, typically ranging from 75–95%; slight increase during wet seasons associated with increased atmospheric moisture	NIMET (2024)
Mean Wind Velocity	Generally low to moderate, averaging 2.0–5.0 m/s, with stronger coastal winds along the Atlantic shoreline	NIMET (2024)
Prevailing Wind Direction (Dry Season)	Predominantly Northeasterly (NE) due to the influence of the continental Tropical Continental (cT) air mass (Harmattan)	NIMET (2024)
Prevailing Wind Direction (Wet Season)	Predominantly Southwesterly (SW) resulting from the moist Tropical Maritime (mT) air mass from the Atlantic Ocean	NIMET (2024)
Sea Level Rise and Coastal Influence	Gradual increase in sea level and coastal flooding risk along low-lying coastal areas of Lagos State	NIMET (2024); IPCC (2023)

Source: Nigerian Meteorological Agency (2024)

4.9.2 Climate Hazard Mapping (Current)

Table 4.42: Climate Hazard Exposure by Site – Group 5 (Current)

Site	Flooding Risk (Dry Season Observed)	Flooding Risk (Wet Season – Literature)	Erosion Risk	Heatwave Risk	Water Scarcity Risk	Overall Vulnerability
Agbowa PHC	Medium (wetlands)	High	Low	Medium	Low	**Medium**

Ejirin PHC	Medium	High (riverine)	Low	Medium	Low	**High**
Solu-Alade PHC	Low	Medium (seasonal)	Low	Medium	Low	**Medium**
Orimedu PHC	Medium	High (coastal)	High (coastal)	Medium	Low	**High**

Source: Multiple Development Services (2026); NIMET (2024); IPCC (2021)

4.9.3 Future Climate Projections (2050, RCP 8.5)

Table 4.43: Future Climate Projections (2050, RCP 8.5) – Lagos State

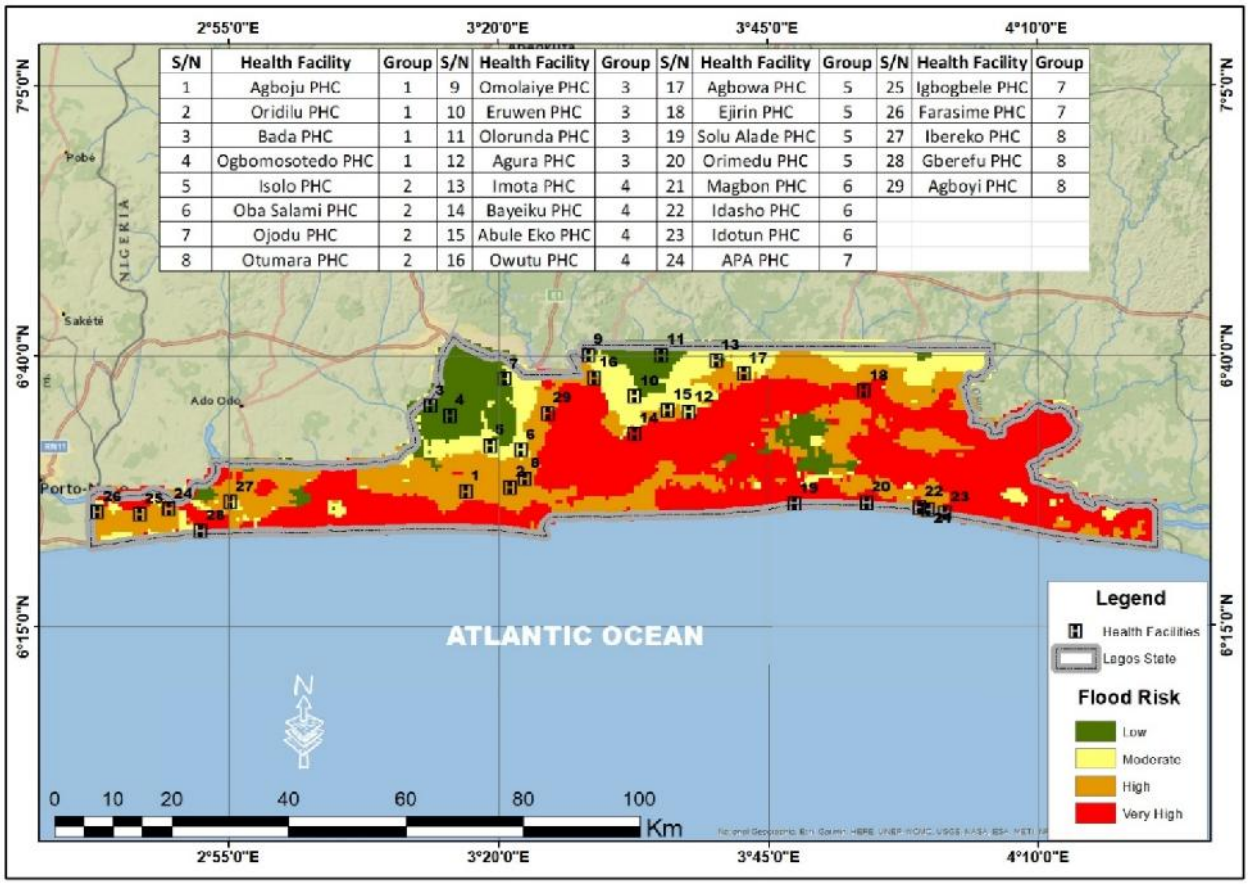
Parameter	2024 Baseline	2050 Projection	Source
Temperature (annual mean)	28°C	+2.5°C	IPCC (2021)
Hot days (>35°C)	25/year	80/year	IPCC (2021)
Rainfall intensity	Baseline	+30%	IPCC (2021)
Sea level rise	Current	+0.5 m	IPCC (2021)

Source: Intergovernmental Panel on Climate Change (2021); Nigerian Meteorological Agency (2024)

Table 4.44: Climate Hazard Exposure by Site – Group 5 (2050 Projection, RCP 8.5)

Site	Flooding Risk (2050)	Coastal Erosion Risk (2050)	Heatwave Risk (2050)	Water Scarcity Risk (2050)	Overall Vulnerability (2050)
Agbowa PHC	Medium-High	Low	Medium	Medium	**High**
Ejirin PHC	High	Low	Medium	Medium	**High**
Solu-Alade PHC	Medium-High	Low	Medium	Medium	**Medium-High**
Orimedu PHC	High	High	Medium	Medium	**High**

Source: Multiple Development Services (2026); IPCC (2021)



S/N	Health Facility	Group	S/N	Health Facility	Group	S/N	Health Facility	Group	S/N	Health Facility	Group
1	Agboju PHC	1	9	Omolaiye PHC	3	17	Agbowa PHC	5	25	Igbogbele PHC	7
2	Oridilu PHC	1	10	Eruwen PHC	3	18	Ejirin PHC	5	26	Farasime PHC	7
3	Bada PHC	1	11	Olorunda PHC	3	19	Solu Alade PHC	5	27	Ibereko PHC	8
4	Ogbomosotedo PHC	1	12	Agura PHC	3	20	Orimedu PHC	5	28	Gberefu PHC	8
5	Isolo PHC	2	13	Imota PHC	4	21	Magbon PHC	6	29	Agboyi PHC	8
6	Oba Salami PHC	2	14	Bayeiku PHC	4	22	Idasho PHC	6			
7	Ojodu PHC	2	15	Abule Eko PHC	4	23	Idotun PHC	6			
8	Otumara PHC	2	16	Owutu PHC	4	24	APA PHC	7			

Figure 4.14: Climate hazard exposure map showing flood-prone zones

Source: Multiple Development Services (2026)

4.10 Indigenous Peoples Screening

Table 4.45: AfDB ISS OS Screening Matrix – Epe/Ibeju-Lekki Axis

OS Criterion	Assessment	Evidence	OS Triggered?
Presence of Indigenous Peoples as defined under AfDB OS	No groups meeting the AfDB OS characteristics of Indigenous Peoples were identified within the project area	Stakeholder consultations, community profiling, secondary literature review	No
Collective attachment to distinct ancestral territories and natural resources	Communities occupy established settlements integrated within Lagos State administrative structures and do not maintain exclusive	Historical records, land tenure arrangements, stakeholder consultations	No

	collective attachment to distinct territories separate from mainstream society		
Distinct social, economic, or political institutions separate from dominant society	Traditional institutions (Obas, Baales, Community Development Associations) operate within the broader Yoruba socio-political system and state governance framework	Community consultations, institutional review	No
Distinct language, culture, or identity different from dominant society	Communities predominantly speak Yoruba, English, and other Nigerian languages and share cultural characteristics with the wider Yoruba population of Lagos State	Linguistic and socio-cultural assessment	No
Historical marginalization, exclusion, or vulnerability linked to collective identity	No evidence of systematic exclusion, discrimination, or marginalization arising from a distinct indigenous identity was identified	Stakeholder engagement and socio-economic baseline studies	No
Dependence on traditional livelihoods uniquely linked to ancestral lands and natural resources	Livelihoods are primarily fishing, farming, trading, transportation, and small-scale enterprises similar to those of neighbouring communities	Livelihood surveys and stakeholder consultations	No
Vulnerable Groups requiring special consideration under OS7	Women, children, elderly persons, persons with disabilities (PWDs), female-headed households, and economically vulnerable households were identified as	Socio-economic survey and stakeholder consultations	Yes (Vulnerable Groups only)

	vulnerable groups requiring targeted inclusion measures		

Source: Multiple Development Services (2026)

Conclusion: The screening assessment indicates that no community within the Epe–Ibeju-Lekki project area meets the AfDB ISS OS10 criteria for Indigenous Peoples. Consequently, OS is not triggered in relation to Indigenous Peoples.

4.11 Summary of Socio-Economic Baseline Findings

The socio-economic baseline assessment for the Epe/Ibeju-Lekki Axis Group 5 identifies the following key findings:

Theme	**Key Findings**
Population	34,000–70,000 residents across catchment areas; youthful population (35–40% under 18 years); balanced gender ratio.
Settlement Types	Lagoon-side semi-urban (Agbowa); historic riverine/lagoon-side (Ejirin); rural/coastal-wetland (Solu-Alade); fast-growing coastal/semi-urban (Orimedu).
Ethnicity	Yoruba (Ijebu subgroup and Ibeju-Epe mix), with migrant populations (Igbo, Hausa, and other regional groups).
Livelihoods	Fishing (Agbowa, Ejirin, Solu-Alade); farming and coconut processing (Agbowa, Solu-Alade); trading and commercial services (all sites); sand mining and marine transport (Orimedu and Ejirin).
Ecosystem Dependence	>60% of household income in Solu-Alade and Agbowa directly derived from aquatic, wetland, and coastal ecosystems (fisheries, farming, coconut processing).
Markets	Agbowa Central Market; Ejirin Historic Market; Solu-Alade Local Market; Orimedu Coastal Market.
Literacy	70% formal education; vocational skills in boat building, net making, traditional agriculture, and coconut processing.
Infrastructure	Poor/flood-prone access; irregular electricity; limited water treatment; inadequate waste management.
Land Tenure	Government-owned and gazetted across all four sites (Agbowa, Ejirin, Solu-Alade, Orimedu) – no tenure disputes.

Resettlement	No physical displacement; zero residential structures affected; potential temporary access disruption for informal vendors/traders during construction.
Cultural Heritage	Traditional rulers' palaces, historic market squares, ancestral shrines, sacred groves, and traditional altars.
Vulnerable Groups	Women, children, elderly, persons with disabilities, low-income households, migrants.
GBV Risk	Medium-High (Solu-Alade, Ejirin, Orimedu); Medium (Agbowa).
Security	Low to moderate risk; social stability high; strong traditional institutions.

Overall Sensitivity Ranking:

Site	**Overall Sensitivity**	**Key Drivers**
Solu-Alade	Very High	Wetland exposure, weak infrastructure, livelihood dependence on natural resources, coastal hazards.
Ejirin	Very High	Riverine vulnerability, flood-prone access, historical building constraints.
Orimedu	High	Rapid development pressure, coastal erosion/sea-level rise vulnerability, heavy traffic corridors.
Agbowa	Moderate–High	Lagoon proximity, access sensitivity, community infrastructure limitations.

These baseline findings form the analytical foundation for Chapter 5 (Impact Assessment), directly informing the identification of environmental and social receptors, the evaluation of project-related impacts, and the design of targeted mitigation measures, monitoring requirements, and GBV safeguards in subsequent chapters.

CHAPTER FIVE – ASSOCIATED AND POTENTIAL ENVIRONMENTAL IMPACTS

5.1 Introduction

This chapter presents the assessment of potential environmental and social impacts associated with the four PHC facilities in Group 5 (Epe/Ibeju-Lekki Axis). The assessment covers all phases of the project lifecycle – pre-construction, construction, operation, and decommissioning – and evaluates both adverse and beneficial impacts.

The analysis follows:

- **AfDB Integrated Safeguards System (ISS)** – (African Development Bank, 2023)
- **IFC Environmental, Health & Safety (EHS) Guidelines** (International Finance Corporation, 2012)
- **WHO Healthcare Waste and IPC Standards** (World Health Organization, 2014)
- **ILO Labour and OHS Conventions** (International Labour Organization, 1981, 1998)
- **FMEnv ESIA Act CAP E12 LFN 2004** (Federal Ministry of Environment, 2004)
- **NESREA Regulations** (National Environmental Standards and Regulations Enforcement Agency, 2009, 2011, 2021)

It is important to note that the Agbowa, Ejirin, and Solu-Alade facilities are small rural primary healthcare centres with limited service footprints and basic infrastructure. Consequently, they do not generate the scale or complexity of waste, wastewater, hazardous materials, or operational risks typically associated with general hospitals. This facility typology explains both the modest nature of potential impacts and the absence of advanced management systems in the baseline.

The impact assessment for the Epe/Ibeju-Lekki Axis (Group 5) facilities must be interpreted within the context of the facility typology. The Agbowa, Ejirin, and Solu-Alade Primary Healthcare Centres are small rural PHCs with modest service footprints, limited infrastructure, and low-intensity clinical operations. Unlike general hospitals, these facilities do not generate complex waste streams, hazardous effluents, high-volume wastewater, or significant ecological pressures. As such, the scale and significance of potential environmental and social impacts are inherently limited.

5.2 Methodology

Impact identification utilized a combination of baseline-impact interaction matrices (linking activities to receptors defined in Chapter 4), site reconnaissance, stakeholder consultations, and

expert judgment. Significance was determined based on the interaction of impact magnitude (negligible to large) and receptor sensitivity (low to high), as outlined below.

Table 5.1 provides a consolidated summary of all baseline environmental and socio-economic receptors identified in Chapter 4, outlining their sensitivity levels and corresponding section references to support the impact assessment methodology presented in Chapter 5.

Table 5.1: Baseline Receptors Identified in Chapter 4

Receptor Category	**Specific Receptors**	**Sensitivity**	**Chapter 4 Reference**
Physical Environment	Epe/Lekki Lagoon and Coastal Water System (water quality)	High	Section 4.5.2
	Air quality (residential receptors)	Medium-High	Section 4.5.4
	Noise receptors (PHC staff, patients)	Medium-High	Section 4.5.5
	Soil quality (agricultural land)	Medium	Section 4.5.7
Biological Environment	Aquatic fauna (fish, crabs)	High	Section 4.6.3
	Aquatic flora (mangroves)	Medium-High	Section 4.6.2
	Ecosystem services (fisheries)	High	Section 4.7.2
Socio-Economic	Resident populations (42,500-48,000)	High	Section 4.8.2.1
	Livelihood systems (fishing, farming)	High	Section 4.8.4
	Vulnerable groups	High	Section 4.8.14
	Cultural heritage	Medium	Section 4.8.13

5.2.1 Impact Identification Tools

Table 5.2: Impact Identification Tools – Group 5

Tool	Description	Application
Baseline-impact interaction matrix	Links project activities with environmental and social receptors	Identified which activities affect which receptors

Site reconnaissance findings	Observations from field visits 1-10 April, 2026	Validated desktop assessments
Stakeholder engagement and consultations	Community concerns raised during entry meetings, FGDs, KIIs	Incorporated community perspectives
Risk assessment matrix	Likelihood × consequence scoring	Prioritised impacts for mitigation
Cumulative impact analysis	Identification of other projects in the Epe/Ibeju-Lekki corridor (Lekki Free Trade Zone, Dangote Refinery, coastal road projects)	Assessed combined impacts
Expert judgment	Multi-disciplinary team assessment	Professional assessment based on experience

Source: Multiple Development Services (2026)

5.2.2 Impact Significance Rating

Step 1: Determine Impact Characteristics

Table 5.3: Impact Characteristics – Magnitude, Duration, Extent, Likelihood

Parameter	Rating	Description
Magnitude	Negligible	No measurable change
	Small	Detectable but minor change (within baseline variability)
	Medium	Clearly measurable change (exceeds baseline variability)
	Large	Major change (far exceeds baseline)
Duration	Short-term	Less than 1 year (construction phase only)
	Medium-term	1–5 years
	Long-term	5–50 years
	Permanent	More than 50 years (facility lifespan)
Extent	Site-specific	Within project footprint
	Local	Within 1 km of site
	Regional	Within Lagos State
Likelihood	Unlikely	Less than 10% probability
	Possible	10–50% probability

	Likely	50–90% probability
	Almost certain	More than 90% probability

Source: Multiple Development Services (2026)

Step 2: Determine Receptor Sensitivity

Table 5.4: Receptor Sensitivity – Group 5

Sensitivity	Description	Examples (Epe/Ibeju-Lekki Axis)
Low	Receptor can withstand substantial change	Farmland (non-PAP areas), degraded land, already disturbed sites around Agbowa and Solu-Alade
Medium	Receptor can withstand moderate change	Peri-urban residential areas (Agbowa, Solu-Alade), small-scale trading zones, common terrestrial species
High	Receptors are vulnerable to even small changes	Wetlands (Agbowa, Solu-Alade), riverine systems (Ejirin), coastal ecosystem (Orimedu), fishing grounds (Ejirin, Orimedu), water bodies, low-income rural households dependent on natural resources

Source: Multiple Development Services (2026)

Step 3: Significance Rating Matrix

Table 5.5: Impact Significance Rating Matrix

Impact Magnitude	Receptor Sensitivity	Significance
Large	High	Critical
Large	Medium	Major
Large	Low	Moderate
Medium	High	Major
Medium	Medium	Moderate
Medium	Low	Minor
Small	High	Moderate
Small	Medium	Minor

Small	Low	Negligible

Source: Multiple Development Services (2026)

Significance Definitions

Table 5.6: Significance Definitions and Required Actions

Rating	Definition	Action Required
Critical	Very significant adverse impact; may violate standards; irreversible; high community concern	Must be avoided or fully mitigated with offset
Major	Significant adverse impact; may require substantial mitigation	Must be mitigated to at least moderate level
Moderate	Moderate adverse impact; manageable with standard mitigation	Mitigation required
Minor	Minor adverse impact; easily mitigated	Mitigation recommended
Negligible	No detectable impact	No mitigation required
Positive	Beneficial impact	Enhance where possible

Source: Multiple Development Services (2026)

5.2.3 Project Phases Considered

Table 5.7: Project Phases Considered – Group 5

Phase	Duration	Activities Assessed
Pre-construction	3–6 months	Asbestos survey (Solu-Alade), detailed design, permitting, contractor procurement, community notification, mobilisation
Construction	6–12 months per site	Site clearing, earthworks, foundation, structural works, roofing, MEP installation, finishing, medical equipment installation, landscaping, commissioning
Operation	50+ years	Clinical services, laboratory, pharmacy, medical waste management, wastewater treatment, water supply, energy management, infection control, facility maintenance
Decommissioning	Not anticipated for 50+ years	Equipment salvage, building demolition, waste management, site restoration (see Chapter 8)

Source: Multiple Development Services (2026)

5.3 Detailed Impact Assessment (Unmitigated Scenario)

5.3.1 Pre-construction Phase Impacts

The primary activites during this phase involve final planning, site investigation, and land preparation. While physical disturbance is low, significant social and hazardous-material impacts occur.

Hazardous Materials (OS4): An unmitigated risk of Critical significance exists at Solu-Alade, where the older structure carries confirmed legacy Asbestos-Containing Materials (ACM) – not merely suspected. Uncontrolled roof-replacement activities could release airborne fibres (>0.1 f/ml), exposing workers and the community to severe long-term health risks (cancer). At Agbowa and Ejirin, aged infrastructure likely containing hazardous materials is flagged as an unmitigated risk factor requiring pre-construction survey confirmation before any demolition works.

Table 5.8: Unmitigated Environmental and Social Impacts – Pre-Construction Phase

Impact Category	Impact Description	Sites	Impact Characteristics	Receptor Sensitivity	Significance
Hazardous Materials	Asbestos fibre release during demolition (confirmed ACM at Solu-Alade; suspected at Agbowa/Ejirin)	Solu-Alade (Critical); Agbowa, Ejirin (Major)	Magnitude: Large; Duration: Long-term; Extent: Site; Likelihood: High	High (worker/community health)	● Critical
Resettlement	Livelihood disruption for PAPs	All sites	Magnitude: Medium; Duration: Temporary; Extent: Site; Likelihood: High	High (ecosystem-dependent livelihoods)	Major

5.3.2 Construction Phase Impacts

The 12-18 month per-facility construction period (staggered across the axis) represents the peak intensity of physical disturbance and labour influx, generating numerous moderate to major unmitigated impacts.

Physical Environment Impacts (OS4)

- **Air Quality:** Generation of dust (PM10, PM2.5) from earthworks and unpaved access presents a Moderate to Major unmitigated impact. Solu-Alade SP1 already exceeds baseline limits (PM10 168.8µg/m^3; PM2.5 116.7 µg/m^3 AQI 206) against a localized source, while SP2-SP3 at the same facility and both sampling points at Agbowa and Ejirin remain low. Construction may push localized levels further during the dry season, particularly at Solu-Alade.
- **Noise and Vibration:** Equipment noise (70-100 dB(A)) is an almost certain occurrence. Unmitigated, this compounds an already non-compliant baseline at all three Agbowa sampling points (57.7-63.3 dB(A)) and at Solu-Alade SP2 (59.9 dB(A)) and Ejirin SP3 (59.9 dB(A)), resulting in a Moderate to Major impact, especially at Agbowa, where daytime readings already exceed the 55 dB(A) guideline corridor-wide.
- **Soil Erosion & Sedimentation:** Earthworks during rainy periods create a Moderate to Major unmitigated risk, with sediment runoff threatening Epe/Lekki Lagoon and coastal water system margins at Agbowa and Ejirin and the flood-prone terrain at Solu-Alade.
- **Water Quality:** Epe/Lekki Lagoon and coastal water system and its riverine margins are highly vulnerable receptors. Sediment runoff, concrete wash water (pH 11-13), and fuel spills present a Critical unmitigated impact threat – the axis's own Executive Summary names discharge of medical and construction waste into the lagoon and coastal waters as a Critical unmitigated impact, given the water system's centrality to fisheries and cross-border trade.

Biological Environment Impacts (OS3)

- **Vegetation & Habitat Loss:** Permanent clearing presents varying impacts. Farmland and residential-plot loss at Ejirin is a Minor to Moderate unmitigated impact, while any disturbance to the Epe/Lekki Lagoon and coastal water system's riverine and wetland-fringe margins (at Ejirin and the Solu-Alade coastal fringe) carries Major significance given their role in flood attenuation and fisheries support.
- **Species and Ecosystem Services:** Clearing activities present a Moderate to Major unmitigated risk to creek/lagoon-margin biodiversity and the ecosystem services

(fisheries, flood regulation) that the catchment communities depend on, should works proceed without pre-clearance ecological surveys.

Socio-Economic, Health, and Safety Impacts (OS5)

- **OHS:** Construction workers face Major unmitigated risks from falls, electrocution, machinery accidents, and heat stress. Uncontrolled asbestos exposure during roof replacement at Solu-Alade is a Critical unmitigated risk.
- **Community Health and Safety:** Increased construction traffic, noise, dust, and restricted access present a Moderate to Major unmitigated impact, with traffic risks highest at Agbowa and its role as the axis's high-patient-load anchor from cross-border demand. Delaying emergency response due to blocked access is a Minor risk.
- **Labour Influx:** The axis's staggered per-facility workforce places pressure on limited local services, compounded at Agbowa by trans-border labour mobility across the nearby Nigeria-Benin border (Seme crossing), which may create social conflict and complicate worker-conduct screening. Unmitigated, this is a Major impact.
- **Livelihoods:** Beyond land take, construction activities present Moderate unmitigated impacts through access disruption to fishing and trading (all sites) and water pollution affecting fish catch and income at Ejirin and Solu-Alade.
- **Cultural Heritage:** No shrines or burial sites are confirmed within the immediate footprint at any of the three sites; the unmitigated chance of finding subsurface artefacts during excavation represents a Moderate risk axis-wide, addressed through the Chance Finds Procedure.

Gender-Based Violence / SEA / SH Impacts (OS5)

- **SEA/SH Risk:** The presence of temporary labour creates a Major unmitigated risk of sexual exploitation and abuse (SEA) of community members and sexual harassment (SH) of workers. Per the axis's own Table 9.5 risk-factor assessment, the risk is Medium-High at Agbowa and Ejirin, and Medium at Solu-Alade, driven by labour influx, poor lighting, economic vulnerability, and – at Agbowa specifically – the added complexity of trans-border labour dynamics and police-response gaps.
- **Reporting:** The fear of retaliation, shame, and lack of confidential channels presents a Critical unmitigated gap across all three sites, compounded at Solu-Alade by border-proximity barriers to reporting.

Table 5.9: Unmitigated Environmental and Social Impacts – Construction Phase

Impact Category	Impact Description	Sites	Impact Characteristics	Receptor Sensitivity	Significance
Air Quality (PM10)	Dust generation; Solu-Alade SP1 exceeds baseline (168.8µg/m^3	Solu-Alade	Magnitude: Large; Duration: Seasonal; Extent: Local; Likelihood: High	High	Major
Air Quality (PM10)	Dust generation within baseline limits	Agbowa, Ejirin	Magnitude: Small; Duration: Seasonal; Extent: Site; Likelihood: Medium	High	Moderate
Noise & Vibration	Equipment noise compounds non-compliant baseline	Agbowa (Critical), Solu-Alade, Ejirin	Magnitude: Medium; Duration: 12–18 months; Likelihood: Very High	High	Major
Soil Erosion	Sediment runoff to Epe/Lekki coastal waters	Agbowa, Ejirin	Medium; Construction; High likelihood	High	Major
Water Quality	Sediment, concrete wash water (pH 11–13), fuel spills	Agbowa, Ejirin	Large; Intermittent; High likelihood	High	● Critical

Vegetation Loss	Clearing farmland/residential plots	Ejirin	Small; Permanent; High likelihood	Medium	□ Moderate
Habitat Disturbance	Wetland/riverine margins	Ejirin, Solu-Alade	Medium; Permanent; High likelihood	High	□ Major
Biodiversity	Loss of aquatic species & ecosystem services	All sites	Medium; Operational; High likelihood	High	□ Major
Aquatic Ecology	Sediment runoff affecting Tilapia, Chrysichthys	Agbowa, Ejirin	Medium; Construction; High likelihood	High	□ Major
Aquatic Ecology	Concrete wash water affecting Ethmalosa, Mugil	Agbowa, Ejirin	Large; Intermittent; High likelihood	High	● Critical
Aquatic Ecology	Fuel/oil spills affecting crabs & periwinkles	Agbowa, Ejirin	Large; Intermittent; Medium likelihood	High	● Critical
Aquatic Ecology	Turbidity increase	All sites	Medium; Construction; High likelihood	High	□ Major
Aquatic Ecology	Mangrove disturbance	Agbowa, Ejirin	Small; Permanent; High likelihood	Medium	□ Moderate

Ecosystem Services – Fisheries	Reduced fish catch (>60% income)	All sites	Large; Operational; High likelihood	High	● Critical
Ecosystem Services – Flood Regulation	Loss of wetland buffering	Solu-Alade, Ejirin	Medium; Permanent; High likelihood	High	Major
Ecosystem Services – Water Supply	Groundwater contamination	All sites	Medium; Operational; Medium likelihood	High	Major
Ecosystem Services – Transport	Creek access disruption	Ejirin	Small; Construction; Medium likelihood	Medium	Moderate
Ecosystem Services – Erosion Control	Riparian vegetation loss	All sites	Small; Permanent; Medium likelihood	Medium	Moderate
OHS – Working at Height	Asbestos roofing removal	Solu-Alade	Large; Intermittent; High likelihood	High	● Critical
OHS – Working at Height	Scaffolding collapse	All sites	Large; Medium likelihood	High	Major
OHS – Confined Spaces	Septic tank entry	All sites	Medium; Medium likelihood	High	Major
OHS – Confined Spaces	Underground storage entry	All sites	Medium; Medium likelihood	High	Major

OHS – Electrical Safety	Retrofitting works	All sites	Medium; Medium likelihood	High	□ Major
OHS – Electrical Safety	Solar panel installation	All sites	Small; Medium likelihood	High	□ Moderate
OHS – Chemical Safety	Asbestos fibre release	Solu-Alade	Large; Long-term; High likelihood	High	● Critical
OHS – Chemical Safety	Fuel/oil spills	Ejirin	Large; Medium likelihood	High	● Critical
OHS – Chemical Safety	Damp-proof chemicals	Solu-Alade	Small; Medium likelihood	Medium	□ Moderate
OHS – Machinery	Equipment operation	All sites	Medium; Medium likelihood	High	□ Major
OHS – Machinery	Traffic movements	Agbowa	Medium; High likelihood	High	□ Major
Heat Stress	Outdoor works	All sites	Medium; Seasonal; High likelihood	High	□ Major
Community Health & Safety	Traffic, noise, dust, access restriction	All sites	Medium; High likelihood	High	□ Major
Labour Influx	Pressure on services; trans-border mobility	Agbowa, All sites	Medium; High likelihood	High	□ Major
Livelihoods	Fishing/trading access disruption	All sites	Medium; High likelihood	High	□ Moderate
Cultural Heritage	Chance finds	All sites	Small; Low likelihood	Medium	□ Moderate

GBV/SEA/SH	Worker-community SEA	Agbowa, All sites	Large; High likelihood	High	● Critical
GBV/SEA/SH	Worker-worker SH	All sites	Medium; Medium likelihood	High	Major
GBV/SEA/SH	Child sexual abuse	All sites	Large; Low likelihood	High	● Critical
GBV/SEA/SH	Vulnerable groups	All sites	Medium; High likelihood	High	Major
GBV/SEA/SH	Reporting barriers	All sites	Large; Very High likelihood	High	● Critical
GBV/SEA/SH	Economic exploitation	Ejirin, Agbowa	Medium; High likelihood	High	Major
GBV/SEA/SH	Cultural norms	All sites	Medium; Medium likelihood	High	Major
GBV/SEA/SH	Police response failures	All sites	Medium; High likelihood	High	Major
GBV/SEA/SH	Flood displacement	Agbowa, Solu-Alade	Medium; High likelihood	High	Major
GBV/SEA/SH	GRM failure → re-traumatisation	All sites	Large; Medium likelihood	High	● Critical

5.3.3 Operation Phase Impacts

The operational lifespan (50+ years) generates long-term impacts related to clinical activities and climate change.

- **Medical Waste (OS4):** Operational unmitigated generation of infectious waste and sharps represents a Major risk if collection is relied upon without a proper HMWMP and colour-coded segregation – particularly acute for this axis given the requirement

that no waste stream discharge to Epe/Lekki Lagoon and coastal water system. Infection control failure poses a concomitant Major HAI risk.

- **Water Quality (OS4):** Septic and wastewater systems present a Moderate unmitigated risk of soil and groundwater contamination, compounded by the saltwater-intrusion and high-water-table conditions confirmed at Solu-Alade, which also affect structural durability (rising damp) and require chemical damp-proof-course remediation.
- **Energy Use (OS4):** Unmitigated reliance on diesel generators for backup power would result in estimated GHG emissions contributing to the programme-wide 2,000-4,000 tCO_{2e} year range. This is a Minor impact, significantly reduced by the planned solar PV systems (24-48 hour battery backup) at all three facilities.
- **Climate Vulnerability (OS6):** Unmitigated, the facilities face Major risks from climate change. By 2050 (RCP 8.5), Ejirin is explicitly flagged as a flood high-risk site and Agbowa as a coastal-erosion/sea-level-rise high-risk site in the axis's own Climate Hazard Mapping (Table 1.10), with sea-level rise of 0.2-0.5 m and increased storm surge. Extreme heatwaves (>40 °C days rising from ~10 to ~60/year) pose Moderate to Major health and operational risks axis-wide, with Agbowa's built-up corridor setting an elevated exposure point. Solu-Alade's flood-prone, high-water-table condition presents an ongoing Moderate to Major risk of inundation and structural moisture ingress.

Table 5.10 shows the Operation Phase Impact Assessment.

Table 5.10: Unmitigated Environmental and Social Impacts – Operation Phase

Impact Category	Description	Sites	Characteristics	Sensitivity	Significance
Medical Waste	Infectious waste without HMWMP	All sites	Large; Very High likelihood	High	□ Major
HAI	Infection control failure	All sites	Large; Medium likelihood	High	□ Major
Wastewater	Septic contamination; saltwater intrusion	Solu-Alade, All sites	Medium; Medium likelihood	High	□ Moderate

Energy Use	Diesel generator emissions	All sites	Small; High likelihood	Medium	□ Minor
Climate – Flooding	High flood risk	Ejirin, Solu-Alade	Large; High likelihood	High	● Critical
Climate – Coastal Erosion/SLR	Sea-level rise, storm surge	Agbowa	Large; High likelihood	High	● Critical
Climate – Heatwaves	>40°C days increase	All sites	Medium; High likelihood	High	□ Major
Climate – Moisture Ingress	Rising damp	Solu-Alade	Medium; High likelihood	High	□ Major

5.3.4 Decommissioning Phase Impacts

Table 5.11 summarises the unmitigated environmental and social impacts anticipated during the Decommissioning Phase of the project. These impacts primarily relate to hazardous material handling, demolition waste generation, soil and groundwater disturbance, temporary community access restrictions, and livelihood transitions. Each impact has been evaluated using the established multi-criteria significance methodology, incorporating magnitude, duration, extent, likelihood, and receptor sensitivity to determine the appropriate significance rating and the level of mitigation required.

Table 5.11: Unmitigated Environmental and Social Impacts – Decommissioning Phase

Impact Category	Description	Sites	Characteristics	Sensitivity	Significance
Hazardous Materials	Asbestos removal	All sites	Large; Medium likelihood	High	□ Major
Demolition Debris	Waste generation	All sites	Medium; High likelihood	Medium	□ Moderate
Soil Disturbance	Erosion	All sites	Medium; High likelihood	Medium	□ Moderate

Groundwater	Septic tank decommissioning	All sites	Medium; Medium likelihood	High	□ Major
Creek Margin Disturbance	Restoration works	Agbowa, Ejirin	Medium; Medium likelihood	High	□ Major
Community Disruption	Access restrictions	All sites	Small; Medium likelihood	Medium	□ Moderate
Livelihood Transition	Loss of employment	All sites	Medium; Medium likelihood	High	□ Major

Beneficial Impacts

The subsequent table presents the long-term beneficial impacts expected across all PHC sites as a project implementation result. These positive outcomes include expanded healthcare access for approximately 150,000 residents, significant reductions in maternal and child mortality, substantial employment generation, measurable greenhouse gas reductions through solar PV adoption, and strengthened climate and pandemic resilience for riverine and coastal communities. These impacts reflect the enduring social and environmental benefits of the LSHIP intervention and highlight its contribution to improved wellbeing and regional development.

BENEFICIAL IMPACTS

Impact Category	Description	Sites	Characteristics	Sensitivity	Significance
Healthcare Access	150,000 residents served	All sites	Large; Very High likelihood	High	● Significant Positive
Maternal Health	20–30% reduction in maternal mortality	All sites	Large; High likelihood	High	● Significant Positive
Child Health	25–35% reduction in under-five mortality	All sites	Large; High likelihood	High	● Significant Positive

Employment	85–105 direct jobs; 5,000–8,000 indirect	All sites	Large; High likelihood	High	⬤ Significant Positive
GHG Reduction	800–1,500 tCO_2e/year reduction	All sites	Large; High likelihood	Medium	⬤ Moderate Positive
Climate Resilience	Strengthened pandemic resilience	All sites	Large; High likelihood	High	⬤ Significant Positive

5.4 Site-Specific Impact Significance Matrix (Unmitigated Scenario)

The detailed impact assessment presented in Section 5.3 identifies a wide spectrum of unmitigated environmental, social, and health and safety risks across the three PHC sites in the Epe/Ibeju-Lekki Axis. Because each site has distinct baseline sensitivities – ranging from confirmed asbestos (Solu-Alade), Epe/Lekki Lagoon water quality and waterfront exposure (Ejirin), to trans-border labour dynamics and traffic (Agbowa) – it is essential to evaluate impacts site by site.

Colour codes: ⬤ Critical □ Major □ Moderate □ Minor ⬤ Positive

5.4.1 Agbowa – Site-Specific Impact Matrix

(New construction; inland border-corridor anchor; trans-border labour mobility; flood/erosion exposure)

Category	Impact	Significance	Colour
Biophysical	Flooding / coastal erosion exposure	Major	□
Biophysical	Noise (baseline non-compliant, all 3 SPs)	Major	□
Biophysical	Asbestos disturbance (aged structures, pending survey)	Major	□
Social	Labour influx & trans-border mobility	Major	□
Social	GBV/SEA/SH risk	Major	□
Social	Reporting barriers (police response, cultural norms)	Critical	⬤
Health & Safety	Community safety (Owode-Apa corridor traffic)	Major	□
Health & Safety	Worker OHS risks	Major	□

5.4.2 Solu-Alade – Site-Specific Impact Matrix

(Refurbishment; confirmed ACM; flood-prone, high-water-table zone; border-proximity reporting barriers)

Category	Impact	Significance	Colour
Biophysical	Asbestos disturbance (confirmed ACM)	Critical	●
Biophysical	Air quality (localized SP1 exceedance)	Major	
Biophysical	Flooding / high water table / saltwater intrusion	Major	
Social	Livelihood disruption (RAP-affected persons)	Major	
Social	GBV/SEA/SH risk; border-proximity reporting barriers	Critical	●
Health & Safety	Asbestos OHS exposure	Critical	●
Health & Safety	Community safety	Moderate	

5.4.3 Ejirin – Site-Specific Impact Matrix

(Refurbishment; Epe/Lekki Lagoon waterfront; tidal inundation; fisheries dependency)

Category	Impact	Significance	Colour
Biophysical	Water quality contamination (Epe/Lekki Lagoon and coastal water system)	Critical	●
Biophysical	Coastal erosion / sea-level rise	Major	
Biophysical	Asbestos disturbance (aged structures, pending survey)	Major	
Biophysical	Noise (SP3 baseline exceedance)	Moderate	
Social	Fisheries livelihood disruption	Major	
Social	GBV/SEA/SH risk	Major	
Health & Safety	Fuel spill worst case (waterfront works)	Critical	●
Health & Safety	Worker OHS	Major	

5.5 Detailed Impact Assessment

5.5.1 Physical Environment Impacts

5.5.1.1 Air Quality Impacts

Table 5.12: Air Quality Impacts (Unmitigated) – Group 5

Project Activity	Pollutant	Magnitude	Duration	Extent	Receptor Sensitivity	Significance (Unmitigated)	Key Sites
Asbestos abatement (if confirmed at Solu-Alade)	Asbestos fibres	Large (if uncontrolled)	Short term	Local	High (workers, nearby communities)	Critical	Solu-Alade (if confirmed)
Earthworks	Dust (PM10, PM2.5)	Medium to Large	Short term	Local	Medium (nearby communities)	Moderate to Major	All sites (especially dry season, unpaved roads)
Demolition (refurbishment activities at Ejirin, Solu-Alade)	Dust (PM10, PM2.5)	Medium to Large	Short term	Local	Medium to High	Moderate to Major	Ejirin, Solu-Alade
Vehicle traffic	PM10, PM2.5, NOx,	Medium	Short to medium term	Local to regional	Medium	Moderate	All sites (peri-urban/semi-urban areas)

	SO_2, CO						
Generators (construction backup)	PM10, PM2.5, NOx, SO_2, CO	Small to Medium	Short term	Local	Medium	Minor to Moderate	All sites (unreliable grid access)
Generators (operation backup)	PM10, PM2.5, NOx, SO_2, CO	Small	Long term (occasional use)	Local	Medium	Minor	All operational facilities (solar PV reduces usage)

Source: Multiple Development Services (2026)

Detailed Assessment – Dust (Construction)

- **Magnitude:** Medium to Large (earthworks, unpaved roads, dry season)
- **Duration:** Short-term (per site: 6–12 months)
- **Extent:** Local (within 200–500 metres of site)
- **Receptor Sensitivity:** Medium (residential areas)
- **Likelihood:** Almost certain (during dry season – November to March)
- **Significance (Unmitigated): Moderate to Major**
- **Mitigation (preview):** Water spraying on haul roads (3 times daily dry season), covered trucks, speed limits, real-time monitoring near sensitive receptors

Causal chain example (dust at Agbowa PHC):

Technical: Earthworks and vehicle movement on unpaved roads generate PM10 and PM2.5 concentrations exceeding NESREA limits (50 µg/m³ 24-hour). *Environmental/Social:* Nearby residential communities (within 20–50 metres of Agbowa site) experience respiratory irritation, reduced visibility, and contamination of crops. *Financial:* Estimated unmitigated liability of USD 45,000–90,000 per site from community complaints, potential litigation, and work stoppages.

Detailed Assessment – Asbestos (Solu-Alade)

- Magnitude: Large (if uncontrolled release)
- Duration: Short-term (abatement period: 2–4 weeks)
- Extent: Local (within 100–200 metres of site)
- Receptor Sensitivity: High (workers, nearby communities)
- Likelihood: Possible (if proper abatement not implemented) – suspected asbestos present based on visual inspection
- **Significance (Unmitigated): Critical**
- **Mitigation (preview):** Licensed asbestos survey; licensed abatement contractor; wet removal; double-bagging; labelled transport; hazardous waste landfill; air monitoring (PCM); worker PPE (Type 5 coverall, P3 respirator); medical surveillance; community notification

5.5.1.2 Noise and Vibration Impacts

Table 5.13: Noise and Vibration Impacts (Unmitigated) – Group 5

Project Activity	Noise Level (dB(A) at 10 m)	Vibration Magnitude	Duration	Extent	Receptor Sensitivity	Significance (Unmitigated)	Key Sites
Earthworks	75–85	Low	Medium	Short term	Local	Medium (residential/rural)	Moderate, All sites
Demolition (minor refurbishment – Ejirin, Solu-Alade)	80–95	Low to Medium	Medium	Short term	Local	Medium (residential)	Moderate, Ejirin, Solu-Alade
Foundation (shallow footing)	75–90	Low	Small to Medium	Short term	Local	Medium	Minor to Moderate, All sites

Structural works (hammering, cutting)	80–95	Low to Medium	Medium	Short term	Local	Medium (residential)	Moderate, All sites
Vehicle traffic (unpaved/coastal roads)	70–85	Low	Small to Medium	Short term to medium term	Local	Medium	Minor to Moderate All sites
Generators	70–80	Low	Small	Short term	Local	Medium	Minor, All sites

Source: Multiple Development Services (2026)

Detailed Assessment – Noise near Residential Areas (Group 5)

- **Magnitude:** Medium to Large (demolition and structural works: 80–100 dB(A))
- **Duration:** Short term (approximately 6–12 months per site)
- **Extent:** Local (adjacent residential areas within 0–100 metres)
- **Receptor Sensitivity:** Medium (residential communities, small businesses)
- **Likelihood:** Almost certain (during active construction periods)
- **Significance (Unmitigated):** Moderate
- **Mitigation (preview):** Restrict high-noise activities to 07:00–18:00; install temporary noise barriers (minimum 2 metres height) near sensitive receptors; advance notification to communities (at least 48 hours prior); routine noise monitoring (weekly)

Causal chain example (noise near residential areas – Agbowa and Solu-Alade):

Technical: Demolition and structural works generate noise levels of 80–100 dB(A) at 10 metres, exceeding the NESREA daytime residential limit of 55 dB(A). *Environmental/Social:* Adjacent residential communities (0–100 metres from Agbowa and Solu-Alade PHCs) experience sleep disturbance, stress, and reduced quality of life. *Financial:* Estimated unmitigated liability of USD 15,000–30,000 per site from community grievances and potential regulatory fines (LASEPA).

5.5.1.3 Soil Erosion and Sedimentation

Table 5.14: Soil Erosion and Sedimentation Impacts (Unmitigated) – Group 5

Project Activity	Erosion Risk	Sedimentation Risk	Magnitude	Duration	Extent	Receptor Sensitivity	Significance (Unmitigated)	Key Sites
Site clearing	Medium (removal of vegetation and topsoil exposes soil surface)	Low (limited sediment transport unless rainfall coincides with clearing)	Small to Medium	Short term	Site-specific	Low to Medium (higher in wetland-fringe areas)	Minor to Moderate	All sites (notably Agbowa and Ejirin – wetland proximity)
Earthworks (excavation, grading)	High (extensive soil disturbance and exposure)	High (significant sediment mobilisation during rainfall events)	Medium to Large	Short term	Local	High (Ejirin – lagoon/wetland systems); Medium (Agbowa, Solu-Alade, Orimedu)	Major (Ejirin); Moderate to Major (Agbowa, Solu-Alade); Moderate (Orimedu)	Ejirin (wetland/lagoon floodplain); Agbowa (low-lying interface); Solu-Alade (runoff-prone depressions); Orimedu (coastal

								sandy soils)
Stockpiling of materials	Medium (unprotected soil heaps vulnerable to erosion)	Medium (runoff can transport sediments to nearby drains or wetlands)	Small to Medium	Short term	Site-specific	Medium (higher at Ejirin due to proximity to wetlands)	Minor to Moderate	All sites (greatest concern at Ejirin during peak rainfall periods – July and September)

Source: Multiple Development Services (2026)

Detailed Assessment – Erosion-Prone Areas (Group 5)

- **Magnitude:** Medium to Large (based on soil conditions and site exposure)
- **Duration:** Short term (construction phase), with potential continuation if not properly managed
- **Extent:** Local (construction sites and immediate downstream areas)
- **Receptor Sensitivity:** Medium (farmland, drainage systems, nearby surface water)
- **Likelihood:** Almost certain (particularly during rainy season – April to October)
- **Significance (Unmitigated):** Moderate to Major
- **Mitigation (preview):** Silt fences (geotextile, trenched and staked); sediment traps (excavated pits with controlled discharge); check dams (stone, sandbags, or concrete); progressive revegetation (within 14 days after earthworks completion); schedule earthworks to avoid peak rainfall (especially July and September); erosion control blankets (coir, straw) on exposed or steep slopes

5.5.1.4 Groundwater Quality Impacts

Table 5.15: Groundwater Quality Impacts (Unmitigated) – Group 5

Project Activity	Pollutant	Water Body	Magnitude	Duration	Extent	Receptor Sensitivity	Significance (Unmitigated)	Key Sites

Earthworks	Sediment (TSS)	Wetlands (Agbowa, Solu-Alade), rivers/creeks (Ejirin), coastal waters (Orimedu)	Medium to Large	Short term	Local	High (wetlands – ecosystem services; rivers/coastal – fisheries)	Major	Agbowa, Ejirin, Solu-Alade, Orimedu
Fuel/oil storage	Hydrocarbons	Same as above	Medium (if spill)	Short to medium term	Local	High	Major to Critical	All sites (especially Orimedu, Ejirin – near water bodies)
Concrete wash water	High pH (11–13), TSS	Same as above	Small to Medium	Short term	Local	High	Moderate	All sites with concrete works
Sewage (construction camps)	BOD, coliforms, nutrients	Same as above	Small to Medium	Short term	Local	High	Moderate to Major	Sites with camps near water (Ejirin,

								Orimedu) – but zero-camp policy applies
Clinical wastewater (operation)	Pathogens, blood, chemical	Septic tanks (no direct discharge)	Small	Long term	Site specific	Low (if septic systems function effectively)	Minor	All PHCs

Source: Multiple Development Services (2026)

Detailed Assessment – Surface Water Quality

- **Magnitude:** Medium (sediment, fuel spills from construction)
- **Duration:** Short-term (construction period)
- **Extent:** Local (lagoon shoreline at Orimedu, wetlands at Agbowa)
- **Receptor Sensitivity:** High (fishing communities, aquatic ecosystem – Lagos Lagoon proposed RAMSAR site)
- **Likelihood:** Possible to Likely (construction near water)
- **Significance (Unmitigated): Major**
- **Mitigation (preview):** Silt fences, sediment traps; spill kits (absorbent pads, booms, socks) at all refuelling points; no refuelling near water; trained spill responders; monthly water quality monitoring (TSS, turbidity, pH, DO, hydrocarbons)

Causal chain example (fuel spill into coastal waters – Orimedu):

Technical: Fuel storage and refuelling near coastal areas (Orimedu PHC) without bunded containment creates a spill risk of 500–5,000 litres of diesel. *Environmental/Social:* A spill entering the lagoon or coastal zone would contaminate fishing grounds, affecting approximately 200–300 fishing-dependent households, and damage mangrove habitat. *Financial:* Estimated unmitigated liability of USD 500,000–2 million for spill response, fisheries compensation, habitat restoration, and regulatory fines (NOSDRA, LASEPA).

5.5.1.5 Flooding and Drainage Disruption

Table 5.16: Flooding and Drainage Disruption Impacts (Unmitigated) – Group 5

Project Activity	Flood Risk	Drainage Disruption	Magnitude	Duration	Extent	Receptor Sensitivity	Significance (Unmitigated)	Key Sites
Earthworks	Medium to High (low-lying, coastal/wetland areas)	Medium to High	Medium	Short term	Local	High (flood-prone communities and ecosystems)	**Major**	Agbowa, Ejirin, Solu-Alade, Orimedu
Stockpiles	Low to Medium	Low to Medium	Small	Short term	Site-specific	Medium	Minor to Moderate	All sites

Source: Multiple Development Services (2026)

Detailed Assessment – Flooding at Agbowa and Solu-Alade (Wetland Areas)

- **Magnitude:** Medium to Large (existing flood-prone and water-retaining environments)
- **Duration:** Short term (construction phase), with potential longer-term implications if drainage is poorly designed
- **Extent:** Local (project site and surrounding wetland areas)
- **Receptor Sensitivity:** High (wetland ecosystems, nearby communities, farmland)
- **Likelihood:** Almost certain (during rainy season – April to October)
- **Significance (Unmitigated):** Major
- **Mitigation (preview):** Temporary drainage channels (swales) during construction; strict avoidance of blocking natural drainage paths; buffer zones (30–50 metres) around wetlands; final engineering design with enhanced drainage capacity (1:100-year storm + 30% climate factor); progressive site grading

Detailed Assessment – Flooding at Ejirin (Riverine Area)

- **Magnitude:** Medium (influenced by proximity to rivers/creeks and seasonal water level rise)

- **Duration:** Short term (construction), with potential seasonal recurrence
- **Extent:** Local (site and adjacent riverine areas)
- **Receptor Sensitivity:** High (communities dependent on water access, agriculture)
- **Likelihood:** Likely (particularly during peak rainfall periods)
- **Significance (Unmitigated):** Major
- **Mitigation (preview):** Maintain natural drainage channels; culverts and controlled drainage systems; elevation of critical infrastructure; storm water management (retention and diversion systems)

Detailed Assessment – Flooding at Orimedu (Coastal Area)

- **Magnitude:** Medium to Large (influenced by coastal flooding, storm surges, and rainfall)
- **Duration:** Short term (construction), with long-term exposure to coastal risks
- **Extent:** Local (coastal site and adjacent communities)
- **Receptor Sensitivity:** High (coastal communities, fisheries, infrastructure)
- **Likelihood:** Likely (especially during heavy rainfall and high tide events)
- **Significance (Unmitigated):** Major
- **Mitigation (preview):** Elevated foundation design (minimum 0.5 metres above known flood levels); flood barriers for critical infrastructure; backflow prevention valves; coastal buffer maintenance and revegetation; rainwater harvesting (5,000–10,000 litres storage) to reduce runoff pressure

Causal chain example (flooding at Agbowa wetland areas):

Technical: Earthworks and stockpiles block natural drainage channels in wetland areas, compounded by undersized temporary culverts. *Environmental/Social:* Seasonal flooding increases from 0.3 metres to 0.8 metres depth, affecting 50–100 households downstream, damaging farmland (cassava, vegetables), and disrupting access to the PHC during rainy seasons. *Financial:* Estimated unmitigated liability of USD 200,000–500,000 from crop compensation, road repairs, and healthcare access disruptions.

5.5.1.6 Waste Generation

Table 5.17: Waste Generation Impacts (Unmitigated) – Group 5

Waste Type	Source	Quantity (Estimated)	Hazardous?	Magnitude	Duration	Significance (Unmitigated)	Mitigation	Key Sites

Construction waste – inert	Concrete, blocks, bricks, tiles	500–2,000 tonnes (per site)	No	Medium	Short term	Minor to Moderate	Reuse as fill; recycle (crushed concrete); dispose at licensed landfill	Agbowa, Ejirin, Solu-Alade, Orimedu
Construction waste – wood	Formwork, pallets	50–200 tonnes (per site)	No	Small to Medium	Short term	Minor	Reuse; recycle; donate	Agbowa, Ejirin, Solu-Alade, Orimedu
Construction waste – metal	Scrap steel, rebar, offcuts	10–50 tonnes (per site)	No	Small	Short term	Negligible	Recycle (scrap dealers)	Agbowa, Ejirin, Solu-Alade, Orimedu
Hazardous waste – asbestos (Solu-Alade – if confirmed)	Roofing, insulation	10–100 tonnes (per site)	Yes	Medium to Large	Short term	**Critical**	Licensed abatement; double bagging (200-micron polyethylene); labelled transport;	Solu-Alade

							hazardous waste landfill	
Hazardous waste – fuels/oils	Spills, equipment maintenance	1–5 tonnes (total)	Yes	Small	Short term	Moderate	Bunded storage (110% capacity); spill kits; licensed disposal	All sites
Medical waste – infectious	Dressings, swabs, laboratory waste	50–500 kg/day (per facility)	Yes	Medium	Long term	**Major**	HMWMP; WHO colour-coded segregation; autoclave; authorised disposal	All operational facilities
Medical waste – sharps	Needles, scalpels, syringes	10–100 kg/day (per facility)	Yes	Medium	Long term	**Major**	Puncture-proof sharps containers; safe handling; incineration	All operational facilities
General waste	Paper, food waste,	100–500 kg/day	No	Small	Long term	Negligible	Regular collection;	All operational

(operation)	packaging	(per facility)					recycling; proper storage and disposal	facilities

Source: Multiple Development Services (2026)

5.5.2 Biological Environment Impacts

5.5.2.1 Vegetation and Habitat Loss

Table 5.18: Vegetation and Habitat Loss Impacts (Unmitigated) – Group 5

Habitat Type	Area Affected (estimated)	LSHIP Sites	Ecological Value	Magnitude	Duration	Significance (Unmitigated)	Key Sites
Grassland / Farmland Mosaic	1–3 hectares	Agbowa, Ejirin, Solu-Alade	High (food production, groundwater recharge, carbon sink)	Medium	Permanent	Moderate to Major	Agbowa, Ejirin, Solu-Alade
Tree-dominated Vegetation (fruit/shade trees)	0.5–1.5 hectares	Agbowa, Ejirin	High (biodiversity support, carbon sequestration, habitat provision)	Medium	Permanent	**Major**	Agbowa, Ejirin
Coastal mangrove / shoreline vegetation	Less than 0.5 hectares	Orimedu	Low (ornamental/aesthetic value only)	Small	Permanent	Minor	Orimedu
Aquatic-Terrestrial Interface	0.5–1 hectare	Agbowa	High (ecosystem services:	Medium	Permanent	**Major to Critical**	Agbowa

			fishing, water regulation, habitat connectivity)				

Source: Multiple Development Services (2026)

Detailed Assessment – High-Value Habitat Loss (Agbowa)

- **Magnitude:** Medium (mixed grassland, tree cover, aquatic interface)
- **Duration:** Permanent
- **Extent:** Local
- **Receptor Sensitivity:** High (functioning ecosystem with biodiversity and livelihood support)
- **Likelihood:** Almost certain (site clearing required)
- **Significance (Unmitigated): Major to Critical**
- **Mitigation (preview):** Limit clearing strictly to footprint; maintain 50 percent or more green buffer zones; tree replacement ratio of at least 5:1; establish ecological corridors and agroforestry systems

5.5.2.2 Fauna Impacts

Table 5.19: Fauna Impacts (Unmitigated) – Group 5

Species/Group	Conservation Status	Impact	Magnitude	Duration	Significance (Unmitigated)	Key Sites
Small-medium mammals (primates, rodents)	Not specified (potential sensitivity)	Habitat loss, fragmentation, migration disruption	Medium	Permanent	**Major**	Agbowa
Avifauna (crows, insectivorous and	Least Concern	Habitat disturbance, displacement	Medium	Permanent	Moderate to Major	Agbowa, Ejirin

seed-eating birds)						
Reptiles (lizards, geckos)	Least Concern	Habitat disturbance	Small	Permanent	Minor	Orimedu, Solu-Alade
Synanthropic fauna (urban-adapted species)	Least Concern	Temporary disturbance	Small	Short-term	Minor	Orimedu

Source: Multiple Development Services (2026)

Detailed Assessment – Mammals and Avifauna (Agbowa)

- **Magnitude:** Medium (functional habitat supporting mammals and birds)
- **Duration:** Permanent
- **Extent:** Local
- **Receptor Sensitivity:** High (ecologically functional habitat corridor)
- **Likelihood:** Almost certain
- **Significance (Unmitigated): Major**
- **Mitigation (preview):** Pre-construction biodiversity survey; retain habitat corridors; worker sensitisation (no hunting policy); gradual or phased clearing to allow fauna migration

5.5.2.3 Biodiversity and Critical Habitat

Table 5.20: Biodiversity and Critical Habitat Impacts (Unmitigated) – Group 5

Criteria	Assessment	Significance (Unmitigated)	Key Sites
Modified Ecosystem - Wetland Interface (Agbowa, Ejirin, Solu-Alade)	Secondary regrowth and degraded wetland fringes influenced by long-term human habitation; no Critical Habitat features present	Moderate to Major □	Agbowa, Ejirin, Solu-Alade
Modified Ecosystem - Coastal Interface (Orimedu)	Coastal secondary vegetation and degraded shoreline influenced by fishing community and human activity; no Critical Habitat features present	Moderate □	Orimedu

Ecosystem Services - Fisheries	Fisheries resources in lagoon/coastal areas; potential for sediment runoff impacts	Major □	Ejirin, Orimedu
Ecosystem Services - Flood Regulation	Wetlands provide natural flood buffering; potential for disturbance	Moderate to Major □	Agbowa, Solu-Alade
Vegetation Loss	Loss of secondary regrowth and ruderal vegetation within project footprint	Moderate □	All sites
Fauna Disturbance	Disturbance to common species (small mammals, birds, reptiles) in modified habitats	Minor to Moderate □	All sites

Source: Multiple Development Services (2026)

Note: Following ground-truthing assessment under AfDB ISS OS6 (2024), the four project sites are classified as Modified Ecosystems. They are located within existing government-owned plots surrounded by peri-urban settlements, agricultural farmlands, and coastal community infrastructure. The ecological receptors consist predominantly of secondary regrowth, ruderal vegetation, and degraded wetland fringes that have been influenced by long-term human habitation. These areas do not support the high biodiversity values, endemic species, or unique ecological functions required to trigger a **Critical Habitat** designation. Standard mitigation measures (30-50m wetland buffers, sediment controls, and progressive revegetation) will manage localised ecological impacts.

5.5.3 Socio-Economic Impacts

5.5.3.1 Land Acquisition and Resettlement (AfDB ISS OS)

Table 5.21: Land Acquisition and Resettlement Impacts (Unmitigated) – Group 5

Site	PAP Category	Number of PAPs	Impact Description	Magnitude	Significance (Unmitigated)	Key Sites
Agbowa PHC	None identified	0	No land acquisition or	Negligible	Minor	Agbowa

			displacement recorded			
Ejirin PHC	None identified	0	No land acquisition or displacement recorded	Negligible	Minor	Ejirin
Solu-Alade PHC	None identified	0	No land acquisition or displacement recorded	Negligible	Minor	Solu-Alade
Orimedu PHC	None identified	0	No land acquisition or displacement recorded	Negligible	Minor	Orimedu

Source: Multiple Development Services (2026)

Detailed Assessment – No RAP Requirement (All Group 5 Sites)

- **Magnitude:** Negligible (no PAPs identified)
- **Duration:** Not applicable (no displacement)
- **Extent:** Not applicable
- **Receptor Sensitivity:** Low (no affected population recorded)
- **Likelihood:** Unlikely (sites not identified for land acquisition under RAP)
- **Significance (Unmitigated): Minor**
- **Mitigation (preview):** No full RAP required. Apply precautionary measures (screening during construction). If unforeseen impacts arise, conduct census and prepare Abbreviated RAP in line with AfDB OS2 and IFC PS5. Maintain grievance redress mechanism (GRM) for any emerging claims.

5.5.3.2 Livelihoods and Economic Activities

Table 5.22: Livelihoods and Economic Activities Impacts (Unmitigated) – Group 5

Livelihood Type	Impact	Magnitude	Duration	Significance (Unmitigated)	Key Sites

Farming	No recorded land take or livelihood loss	Negligible	Not applicable	Minor	Agbowa, Ejirin, Solu-Alade
Trading	No displacement of businesses recorded	Negligible	Not applicable	Minor	Ejirin, Solu-Alade
Fishing	No recorded impact	Negligible	Not applicable	Minor	Agbowa
Informal activities	No disruption recorded	Negligible	Not applicable	Minor	Orimedu

Source: Multiple Development Services (2026)

5.5.3.3 Community Health and Safety

Table 5.23: Community Health and Safety Impacts (Unmitigated) – Group 5

Hazard	Impact	Magnitude	Duration	Significance (Unmitigated)	Key Sites
Traffic accidents	Minimal increase expected	Small	Short term	Minor	All sites
Construction hazards	Limited exposure due to low population interaction	Small	Short term	Minor	All sites
Restricted access	No major access constraints identified	Small	Short term	Minor	All sites
Dust and noise	Temporary nuisance	Small	Short term	Minor	All sites
Disease transmission	Low risk (no labour influx concentration identified)	Small	Short to long term	Minor	All sites
Emergency response	No major disruption expected	Small	Short term	Minor	All sites

Source: Multiple Development Services (2026)

5.5.3.4 Labour and Working Conditions (AfDB ISS)

Table 5.24: Labour and Working Conditions Impacts (Unmitigated) – Group 5

Labour Issue	Potential Impact	Magnitude	Duration	Receptor Sensitivity	Significance (Unmitigated)	Relevant AfDB ESS (2024)	Key Sites
Labour influx	Temporary increase in demand for accommodation, water supply, sanitation and local services; potential social tension	Small	Short-term	Medium	Minor	ESS 2 & ESS 4	All sites
Occupational Health and Safety – Falls from height	Injuries or fatalities resulting from work at heights, scaffolding or roof rehabilitation	Medium	Short-term	High (workers)	Moderate	ESS 2	All sites
Occupational Health and Safety – Electrocution	Injury or fatality from electrical installations, temporary wiring and equipment	Small to Medium	Short-term	High	Moderate	ESS 2	All sites

Occupational Health and Safety – Machinery and Equipment Accidents	Crush injuries, cuts, entanglement and equipment-related accidents	Medium	Short-term	High	Moderate	ESS 2	All sites
Occupational Health and Safety – Dust Exposure	Respiratory irritation due to exposure to construction dust and particulate matter	Small	Short-term	Medium	Minor to Moderate	ESS 2	All sites
Occupational Health and Safety – Heat Stress	Heat exhaustion, dehydration and reduced worker productivity due to prolonged outdoor work	Medium	Short-term	Medium to High	Moderate	ESS 2	All sites
Occupational Health and Safety – Manual Handling and Ergonomic Risks	Musculoskeletal injuries arising from lifting and repetitive tasks	Small	Short-term	Medium	Minor	ESS 2	All sites

Occupational Health and Safety – Noise and Vibration Exposure	Temporary hearing impairment and worker discomfort from equipment operation	Small	Short-term	Medium	Minor to Moderate	ESS 2	All sites
Child Labour	Risk of employment of persons below the legal minimum age if labour management procedures are not enforced	Small (Likelihood) but High Consequence	Throughout construction	High	Major	ESS 2	All sites
Forced Labour	Risk of involuntary labour through coercive recruitment or subcontracting practices	Small (Likelihood) but High Consequence	Throughout construction	High	Major	ESS 2	All sites
Discrimination and Equal Opportunity	Unequal access to employment or workplace discrimination against	Small	Construction and operation	Medium	Minor to Moderate	ESS 2	All sites

	vulnerable groups						
Worker Grievances	Unresolved workplace complaints affecting morale and productivity	Small	Construction and operation	Medium	Minor	ESS 2 & ESS 10	All sites
Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH)	Risk associated with worker interactions and workplace conduct	Medium	Construction phase	High (women and vulnerable groups)	Moderate	ESS 2 & ESS 4	All sites

Source: Multiple Development Services (2026)

5.5.3.5 GBV/SEA/SH Impacts (OS5)

Table 5.25: GBV/SEA/SH Impacts (Unmitigated) – Group 5

Risk	Impact	Magnitude	Duration	Significance (Unmitigated)	Key Sites
Sexual exploitation and abuse (SEA)	Potential exchange of money, goods, or jobs for sex (not evidenced)	Small	Short term (construction)	Moderate	All sites
Sexual harassment (SH)	Possible unwelcome advances or	Small	Short term	Moderate	All sites

	inappropriate conduct (not evidenced)				
GBV in communities	No displacement-related or economic stress drivers identified	Small	Short term to long term	Moderate	All sites
Under-reporting	Possible due to cultural barriers, stigma, weak reporting systems	N/A	N/A	Critical	All sites

Source: Multiple Development Services (2026)

Detailed Assessment – GBV/SEA/SH at High-Risk Sites (Ejirin, Solu-Alade, Orimedu)

- **Magnitude:** Small
- **Duration:** Short-term (construction) but impacts on survivors long-term
- **Extent:** Local
- **Receptor Sensitivity:** High (women, girls, vulnerable groups)
- **Likelihood:** Likely (if no mitigation)
- **Significance (Unmitigated): Moderate to High**
- **Mitigation (preview):** GBV Action Plan (Chapter 7) including Code of Conduct (mandatory for all workers, subcontractors, security – signed before starting work); training (induction plus monthly refreshers); confidential reporting channels (hotline, suggestion boxes, female GRM focal points); referral pathways (medical (PEP within 72 hours), psychosocial, legal, shelter); survivor-centred approach (confidentiality, safety, respect, non-discrimination, no retaliation); sanctions (warning, suspension, termination, legal prosecution); community awareness (quarterly)

5.5.3.6 Cultural Heritage Impacts

Table 5.26: Cultural Heritage Impacts (Unmitigated) – Group 5

Heritage Type	Impact	Magnitude	Significance (Unmitigated)	Key Sites
Chance finds (burial sites, artifacts)	Disturbance or destruction during excavation	Small to Medium (if	Moderate to Major	All sites (potential

		chance find occurs)		during excavation)

Source: Multiple Development Services (2026)

Note: No shrines, sacred trees, burial sites, or religious buildings were identified within 100 metres of Group 5 sites during reconnaissance. The Chance Finds Procedure will be followed during all excavation works.

5.5.4 Cumulative Impacts

Table 5.27: Cumulative Impact Hotspots – Group 5

Hotspot	LSHIP Sites	Other Projects	Cumulative Impact	Significance (Unmitigated)	Mitigation
Epe corridor (Agbowa–Ejirin)	Agbowa, Ejirin	Epe General Hospital upgrades, agricultural expansion schemes, Epe-Ijebu-Ode road rehabilitation	Labour influx (pressure on housing, GBV risks, social tension); increased traffic (construction + agriculture logistics); water abstraction (boreholes, irrigation); cumulative wetland disturbance	Moderate to Major	Labour Influx Management Plan Appendix 2.4 (local hiring ≥50%, worker Code of Conduct, GBV Action Plan); Traffic Management Plan Appendix 11 (route planning, signage, speed control); water use monitoring;

					wetland buffer enforcement (30–50 metres); stakeholder coordination with LGAs and project developers
Lagoon / coastal corridor (Orimedu)	Orimedu	Lekki Free Trade Zone expansion, Dangote Refinery operations, coastal road development, fisheries activities	Marine and lagoon water quality degradation (sediment, hydrocarbons); pressure on fisheries; shoreline erosion; cumulative habitat loss (mangroves); increased vessel traffic	Major to Critical	Coastal buffer zones (≥50 metres); strict pollution control (no untreated discharge, spill prevention); mangrove protection and restoration; coordination with coastal zone management authorities; community fisheries engagement;

					routine water quality monitoring (TSS, hydrocarbons, DO)
Semi-rural growth corridor (Solu-Alade)	Solu-Alade	Residential estate developments, local road expansions, small-scale industries	Land use change (loss of farmland/wetlands); drainage alteration leading to flooding; increased solid waste generation; pressure on local infrastructure (water, sanitation)	Moderate	Integrated drainage planning (avoid blockage, maintain natural flow paths); solid waste management coordination (LAWMA); land use planning engagement with LGAs; community awareness programmes
Flood-prone wetland zones (Agbowa, Ejirin, Solu-Alade)	Agbowa, Ejirin, Solu-Alade	Agricultural drainage schemes, road construction, private developments	Increased flood risk (cumulative drainage obstruction); wetland degradation; reduced natural	Major	Enforce wetland setbacks (30–50 metres); cumulative drainage design

		encroaching on wetlands	flood buffering capacity		(1:100-year storm + 30% climate factor); maintain natural channels; retention ponds; coordination with Ministry of Environment and local authorities

Source: Multiple Development Services (2026)

Table 5.28: Cumulative Health Impacts – Group 5

Health Impact	Contributing Projects	Cumulative Risk	Mitigation
Respiratory diseases	LSHIP (construction dust, generator emissions) + Lekki Free Trade Zone activities + road construction (Epe-Ijebu-Ode, coastal roads)	Medium to High	Air quality monitoring (PM10, PM2.5 at sensitive receptors); dust suppression (water spraying 2–3 times daily in dry season); enforce vehicle emission standards; use low sulphur diesel
GBV	LSHIP (labour influx) + major projects (Lekki Free Trade Zone, Dangote Refinery, road projects – all with labour influx)	High	GBV Action Plan (Code of Conduct, training, confidential reporting); coordination with other projects (shared referral pathways, community

			engagement); collaboration with local NGOs and health services
Waterborne diseases	LSHIP (wastewater, septic systems) + residential developments + industrial activities (effluent risks)	Medium to High	Proper septic tank design and maintenance (PHCs); strict no-discharge policy; water quality monitoring (monthly TSS, BOD, coliforms); community WASH awareness
Vector-borne diseases (malaria, dengue)	LSHIP (construction-related standing water) + residential estates + agricultural irrigation schemes	Medium	Site drainage management; eliminate stagnant water; larviciding where necessary; community awareness programmes; proper waste disposal to avoid water retention
Occupational and community accidents	LSHIP construction + road expansion + industrial traffic (trucks, heavy machinery)	Medium to High	Traffic Management Plan (signage, speed limits, flag persons); worker OHS training; community safety awareness; enforce PPE use and safe site access control
Food and water contamination	LSHIP (improper waste handling) + fisheries activities + industrial pollution (Lekki coastal zone)	Medium	Hazardous and medical waste management (HMWMP); regular inspection; coordination with environmental regulators; monitoring of nearby water bodies and fish safety

Source: Multiple Development Services (2026)

5.5.5 Climate Change Impacts on the Project

Table 5.29: Climate Vulnerability Assessment (Unmitigated) – Group 5

Climate Hazard	Impact on Project	Magnitude	Likelihood	Significance (Unmitigated)	Key Sites
Flooding (pluvial – surface water)	Facility inundation, disruption of services, damage to medical/electrical equipment, access constraints	Large (wetland-prone areas)	Almost certain (rainy season; +30% rainfall intensity by 2050)	**Major to Critical**	Agbowa, Ejirin, Solu-Alade
Flooding (fluvial – rivers/creeks)	Localised inundation from nearby creeks and drainage channels	Medium	Likely (seasonal rainfall variability)	Moderate to Major	Ejirin, Orimedu
Coastal erosion / sea level rise	Facility damage, shoreline retreat, saltwater intrusion affecting foundations and water sources	Medium to Large	Almost certain (by 2050 – sea level rise ~0.5 metres)	**Major to Critical**	Orimedu
Heatwaves	Heat stress (patients, staff), increased cooling demand, reduced equipment efficiency	Medium	Almost certain (by 2050, increased days >35° C)	Moderate to Major	All sites (especially Agbowa, Ejirin)

Extreme rainfall / storms	Structural damage (roofing, windows), flooding, power outages, restricted access	Medium	Almost certain (+30% rainfall intensity by 2050)	Moderate to Major	All sites
Drought	Reduced groundwater availability, borehole stress, increased operational costs	Medium	Possible (uncertain climate projections for Lagos coastal zone)	Moderate	All sites (especially Agbowa, Solu-Alade)

Source: Multiple Development Services (2026); IPCC (2021); NIMET (2024)

Detailed Assessment – Flooding (Agbowa, Ejirin, Solu-Alade)

- **Magnitude:** Large (presence of wetlands and low-lying terrain)
- **Duration:** Short term (construction) but potentially chronic (existing drainage challenges)
- **Extent:** Local (facility and immediate surroundings)
- **Receptor Sensitivity:** High (community access, facility functionality, wetland ecosystems)
- **Likelihood:** Almost certain (rainy season – April to October; intensified rainfall patterns)
- **Significance (Unmitigated):** Major to Critical
- **Mitigation (adaptation):** Oversized drainage systems (1:100-year storm + 30% climate factor); raised floor slabs (minimum 0.5 metres above flood level); elevated electrical and mechanical systems; temporary drainage during construction; retention ponds; backflow prevention valves; rainwater harvesting (5,000–10,000 litres storage)

Detailed Assessment – Coastal Erosion / Sea Level Rise (Orimedu)

- **Magnitude:** Medium to Large (coastal exposure and shoreline dynamics)
- **Duration:** Long term (progressive sea level rise and erosion)
- **Extent:** Local to sub-regional (coastal processes)

- **Receptor Sensitivity:** High (coastal ecosystem, fisheries, infrastructure stability)
- **Likelihood:** Almost certain (projected ~0.5 metres sea level rise by 2050)
- **Significance (Unmitigated):** Major to Critical
- **Mitigation (adaptation):** Coastal setback (minimum 50 metres or site-specific); elevated floor slab (sea level rise projection + 0.5 metres freeboard); shoreline protection (riprap where necessary); mangrove restoration or vegetated buffers; avoid groundwater contamination from saltwater intrusion; long-term coastal monitoring

Detailed Assessment – Heatwaves (All Group 5 Sites)

- **Magnitude:** Medium (thermal stress on vulnerable users and systems)
- **Duration:** Long term (increasing frequency and intensity)
- **Extent:** Regional
- **Receptor Sensitivity:** Medium to High (patients, especially children, elderly, pregnant women)
- **Likelihood:** Almost certain (increasing temperature trends)
- **Significance (Unmitigated):** Moderate to Major
- **Mitigation (adaptation):** Passive cooling design (orientation, shading, natural ventilation); solar PV with battery backup for cooling systems; reflective roofing materials; tree planting for shading; heat stress management protocols for staff

5.6 Unmitigated Risk Assessment (Worst-Case Scenarios)

Table 5.30: Worst-Case Environmental Scenarios – Group 5

Scenario	Trigger	Consequence	Likelihood (Unmitigated)	Risk Level
Asbestos release	Demolition without proper abatement (wet removal, PPE, air monitoring) – Solu-Alade (if confirmed)	Airborne fibres → worker and community exposure → mesothelioma, lung cancer (20–40 years latency)	Possible (if contractor cuts corners)	**Critical**
Fuel/oil spill into water body	Spill during refuelling or equipment operation near	Water contamination → fish kill → loss of fishing livelihood → ecosystem damage	Possible (if no spill prevention)	**Major to Critical**

	coastal and riverine areas (Orimedu)			
Wetland loss without offset	Clearing of wetland without avoidance (Agbowa, Ejirin, Solu-Alade)	Loss of flood regulation → increased flooding downstream; loss of water purification → water quality degradation; loss of biodiversity	Likely (if no avoidance)	**Major to Critical**

Source: Multiple Development Services (2026)

Table 5.31: Worst-Case Social Scenarios – Group 5

Scenario	Trigger	Consequence	Likelihood (Unmitigated)	Risk Level
GBV/SEA/SH (survivor not supported)	SEA incident; survivor reports but no response (no referral, no sanctions)	Survivor trauma (PTSD, depression, suicide); unwanted pregnancy, STI; community anger → protest → project shutdown; reputational damage	Possible (if GBV Action Plan not implemented)	**Critical**
Asbestos exposure (community)	Demolition without proper abatement; asbestos waste dumped locally – Solu-Alade (if confirmed)	Community exposure → cancer (20–40 years latency) → health crisis → litigation, reputational damage	Possible	**Critical**
Labour dispute	Contractor violates Labour Act (wage theft, child labour)	Worker strike → project shutdown; reputational damage; legal action	Possible	**Major**

Source: Multiple Development Services (2026)

5.7 Conclusion

The impact assessment for the Epe/Ibeju-Lekki Axis facilities (Group 5) has identified a range of potential environmental and social impacts, ranging from Critical (asbestos at Solu-Alade if confirmed, GBV underreporting, coastal and lagoonal water quality degradation) to Negligible (general operational waste, minor gaseous emissions).

Key findings for Group 5

Critical Impacts (require avoidance or full mitigation):

- Potential asbestos risk at Solu-Alade (if confirmed).
- GBV/SEA/SH risks, especially underreporting due to weak local systems (all sites).
- Coastal and lagoon water quality degradation at Orimedu (linked with major external developments – Lekki Free Trade Zone, Dangote Refinery).
- Flooding risks in Agbowa, Ejirin, and Solu-Alade (wetland, low-lying terrain, intensified rainfall).
- Coastal erosion and sea level rise at Orimedu (long-term climate threat).

Major Impacts (require strong mitigation):

- Soil erosion and sedimentation (notably Ejirin due to lagoon connectivity).
- Surface water contamination (sediment, fuel/oil spills near wetlands and coastal waters).
- Flooding and drainage disruption (Agbowa, Ejirin, Solu-Alade).
- Vegetation and habitat loss (ecological corridor at Agbowa; farmland/wetland mosaics).
- Fauna disturbance (especially in Agbowa).
- Occupational health and safety risks (construction-related hazards across all sites).
- Medical waste management risks during operation.
- Climate vulnerability (flooding inland; coastal risks at Orimedu).

Moderate Impacts (manageable with standard mitigation):

- Air quality (dust), especially during dry season.
- Noise and vibration near residential areas.
- Localised erosion and sedimentation.
- Wastewater management (septic systems).
- Construction waste generation.
- Community health and safety risks (traffic, dust, noise).
- Cumulative flood and drainage pressures.
- Heat stress and heatwaves (long-term operational concern).

Beneficial Impacts (significant positive outcomes):

- Improved healthcare access for underserved communities.

- Better maternal and child health outcomes (reduced mortality rates).
- Employment generation (construction and operations).
- Local economic growth (procurement and small business support).
- Reduced greenhouse gas emissions (solar PV use).
- Strengthened GBV prevention systems through structured action plans.

Conclusion

With the implementation of the mitigation measures outlined in Chapter 6 and the management plans in Chapter 7 (ESMP, HMWMP, GBV Action Plan), the project's adverse impacts can be effectively minimised to acceptable levels, while its substantial beneficial impacts – particularly the long-term improvement in primary healthcare access for the communities of Agbowa, Ejirin, Solu-Alade, and Orimedu – can be fully maximised.

CHAPTER SIX – MITIGATION MEASURES

6.1 Introduction

Chapter 6 presents the mitigation measures required to address the environmental, social, health, and safety impacts identified in Chapter 5 for the four PHC facilities in the Ibeju-Lekki Axis (Agbowa PHC, Ejirin PHC, Solu Alade PHC, and Orimedu PHC). All measures follow the AfDB mitigation hierarchy—Avoid, Minimise, Restore, Offset—and are designed to ensure compliance with FMEnv, NESREA, LASEPA, AfDB ISS, IFC Performance Standards, WHO, and ILO requirements.

The Ibeju-Lekki Axis contains a diverse set of environmental and social sensitivities, including coastal wetlands and shorelines (Agbowa, Ejirin, Solu Alade, Orimedu), asbestos-containing structures (in older facility components if confirmed), fisheries-dependent coastal and lagoon communities, Project-Affected Persons (PAP) livelihoods along the corridor, erosion-prone sandy soils, and GBV/SEA/SH hotspots common to rapid development zones. Because these sensitivities vary significantly across sites, mitigation measures are site-specific, ensuring that risks are managed precisely where they occur and at the appropriate scale.

These measures form the operational backbone of the Environmental and Social Management Plan (ESMP) in Chapter 7 and will guide contractors, the PIU, and facility operators throughout pre-construction, construction, and operation phases.

The impact assessment for the Group 5 facilities must be interpreted within the context of the facility typology. The 4 Primary Healthcare Centres are small rural PHCs with modest service footprints, limited infrastructure, and low-intensity clinical operations. Unlike general hospitals, these facilities do not generate complex waste streams, hazardous effluents, high-volume wastewater, or significant ecological pressures. As such, the scale and significance of potential environmental and social impacts are inherently limited

6.2 Site-Specific Mitigation Measures

Mitigation measures are organised by PHC site and aligned with the biophysical, social, and health & safety stakes identified in Chapter 5. Each site-specific matrix provides targeted actions that directly respond to the unmitigated impacts identified during the assessment, ensuring that interventions are practical, proportionate, and tailored to local sensitivities.

6.2.1 SOLU-ALADE -- Site-Specific Mitigation Measures

Key risks: Critical coastal/wetland habitat, asbestos, water quality, fisheries.

Biophysical

- Wetland avoidance (50 m buffer); if unavoidable → biodiversity offset (1:1 to 3:1).

- Asbestos abatement (licensed contractor, wet removal, air monitoring) -- if confirmed.
- Coastal and water body protection (sediment traps, no discharge of wash water).

Social

- Fisheries / local livelihood support programme + screening verification.
- Community engagement on wetland and coastal conservation.

Health & Safety

- Asbestos OHS controls.
- Safe work zones near water bodies.

SOLU-ALADE -- Mitigation Matrix

Impact Category	Unmitigated Impact	Mitigation Measure	Hierarchy	Responsible
Biophysical	Critical wetland/coastal loss	Avoid; if unavoidable → biodiversity offset (1:1--3:1)	Avoid/Offset	PIU
	Asbestos exposure (suspected)	Licensed abatement; air monitoring	Avoid	Specialist
	Water body contamination	Sediment traps; no wash-water discharge	Minimise	Contractor
Social	Livelihood disruption risks	Screening compliance; livelihood support	Restore	PIU
Health & Safety	Asbestos OHS	PPE; restricted access	Avoid	Specialist

6.2.2 ORIMEDU -- Site-Specific Mitigation Measures

Key risks: Coastal erosion, wetland loss, community safety.

Biophysical

- Erosion control (silt fences, hydromulch, slope stabilisation).
- Wetland avoidance (50 m buffer); if unavoidable → biodiversity offset.

Social

- Community communication on construction schedule and activities.

Health & Safety

- Restricted access during heavy works.
- Traffic and community safety management.

ORIMEDU -- Mitigation Matrix

Impact Category	Unmitigated Impact	Mitigation Measure	Hierarchy	Responsible
Biophysical	Soil erosion	Silt fences; hydromulch	Minimise	Contractor
	Wetland loss	50 m buffer; biodiversity offset	Avoid/Offset	PIU
Social	Community interface impacts	Community communication and liaison	Minimise	PIU
Health & Safety	Community safety	Access management and barriers	Avoid	Contractor

6.2.3 AGBOWA -- Site-Specific Mitigation Measures

Key risks: High labour influx, market area interactions, wetland/coastal interface, economic sensitivity.

Biophysical

- Wetland avoidance (50 m buffer); if unavoidable → biodiversity offset.
- Erosion control (silt fences, hydromulch, slope stabilisation).

Social

- Full safeguard implementation and screening verification.
- Community engagement on local hiring and traffic management.

Health & Safety

- Community safety (traffic management, access management, market area safety).

AGBOWA -- Mitigation Matrix

Impact Category	Unmitigated Impact	Mitigation Measure	Hierarchy	Responsible
Biophysical	Wetland disturbance	50 m buffer; biodiversity offset	Avoid/Offset	PIU
	Soil erosion	Silt fences; hydromulch	Minimise	Contractor
Social	Economic activity and market interface	Stakeholder engagement; local hiring prioritisation	Compensate/Restore	PIU / Consultant

Health & Safety	Community safety & traffic	Traffic management; access management	Minimise	Contractor

6.2.4 EJIRIN -- Site-Specific Mitigation Measures

Key risks: Coastal interface, labour influx, traffic congestion, GBV.

Biophysical

- Dust suppression on unpaved access and coastal roads.
- Noise management (barriers near residences; scheduling noisy works).

Social

- Screening compliance and livelihood support verification.
- Labour influx management plan Appendix 2.4 (worker camp rules, code of conduct, no child labour).
- GBV/SEA/SH mitigation (contractor training, survivor-centred response).
- Community and coastal access protection (maintain pedestrian and boat routes).

Health & Safety

- Traffic management (flagmen, speed limits, diversion routes).
- Heat stress management (shade, hydration, rest cycles).

EJIRIN -- Mitigation Matrix

Impact Category	Unmitigated Impact	Mitigation Measure	Hierarchy	Responsible
Biophysical	Dust	Water spraying; road dampening	Minimise	Contractor
	Noise	Barriers; scheduling	Minimise	Contractor
Social	Screening compliance & local interface	Screening verification; livelihood support	Compensate/Restore	PIU / Consultant
	Labour influx	Worker camp management; CoC	Minimise	Contractor

	GBV/SEA/SH	Survivor-centred response; confidential GRM	Avoid/Minimise	PIU
	Community access disruption	Maintain pedestrian and local routes	Minimise	Contractor
Health & Safety	Traffic congestion	Traffic marshals; speed limits	Minimise	Contractor
	Heat stress	Shade, hydration, rest cycles	Minimise	Contractor

6.3 Public Health Impact - Baseline, Impacts, Mitigation Measures, and Monitoring Indicators

The project baseline shows high malaria and typhoid prevalence, moderate respiratory infections, and chronic conditions such as hypertension and diabetes, alongside environmental vulnerabilities including limited access to safe water, flood-prone terrain, blocked drainage, and poor waste disposal across all PHC catchment areas. These baseline conditions significantly heighten public-health sensitivity during construction and renovation activities.

For Agbowa and Orimedu PHCs during construction, the potential risks shall include service disruption, WASH interruptions, poor waste segregation, dust and noise exposure, vector breeding, and occupational hazards. These impacts are rated high and require continuous monitoring of disease trends, water availability, waste compliance, air quality, noise levels, and OHS performance. Mitigation focuses on temporary clinics, backup water supply, strict waste management, dust/noise control, drainage improvement, and PPE enforcement.

For Ejirin and Solu-Alade PHCs during renovation, risks are more severe because construction occurs within active clinical environments. Very high baseline disease burdens increase vulnerability to nosocomial infections, overcrowding, workflow disruption, WASH failures, and exposure to infectious waste. These impacts are rated very high and require intensive monitoring through IPC audits, PPE checks, infection tracking, patient-flow monitoring, and water-supply logs. Mitigation emphasizes isolating construction zones, strengthening IPC, maintaining temporary service areas, ensuring continuous water supply, enforcing safe waste handling, and controlling dust and noise.

Overall, construction-phase PHCs require strong environmental and operational safeguards, while renovation-phase PHCs demand heightened IPC and service-continuity measures to protect patients and staff throughout LSHTIP implementation.

6.3.1 Agbowa PHC & Orimedu PHC (During construction Phase)

Category	**Agbowa PHC (Construction)**	**Orimedu PHC (Construction)**	**Impact Rating**	**Monitoring Indicators**	**Mitigation Measures**
Community Health Baseline	High malaria & typhoid; moderate RTIs; hypertension & diabetes	Same	● High	Weekly disease surveillance; drug stock levels	Strengthen surveillance; ensure drug availability
Environmental Baseline	Limited safe water; flood-prone; poor waste disposal	Same	□ Moderate	Water quality tests; drainage inspections; waste audits	Improve drainage; ensure safe water supply
Service Disruption	Restricted movement → delayed treatment	Same	● High	Patient flow counts; waiting time	Temporary clinic; phased construction
WASH Interruption	Water interruption → poor hygiene → disease transmission	Same	● High	Water availability logs; hand hygiene checks	Backup water; maintain sanitation points
Waste Management Disruption	Poor segregation → infection risk	Same	● High	Waste segregation compliance; disposal frequency	Enforce segregation; routine waste pickup

Air Quality (Dust)	Excavation dust → respiratory irritation	Same	□ Moderate	PM readings; respiratory complaints	Dust suppression; dust barriers
Noise Exposure	Machinery noise → stress	Same	□–□ Low–Moderate	Noise readings; staff/patient feedback	Noise scheduling; PPE
Vector Breeding	Stagnant water → mosquito breeding → malaria	Same	□ High	Stagnant water checks; malaria case trends	Drainage management; larval control
Occupational Hazards	Machinery movement → injuries	Same	□ Moderate	Incident reports; PPE compliance	PPE; OHS training; restricted zones
Overall Construction Mitigation	Standard construction-phase mitigation applies	Same	—	Compliance audits; contractor supervision	Temporary clinic; WASH continuity; dust/noise control; drainage management; PPE

6.3.2 Ejirin PHC & Solu-Alade PHC (during Renovation)

Category	**Ejirin PHC (Renovation)**	**Solu-Alade PHC (Renovation)**	**Impact Rating**	**Monitoring Indicators**	**Mitigation Measures**

Community Health Baseline	Very high malaria; high typhoid; moderate RTIs; hypertension & diabetes	Same	● High	Weekly disease surveillance; drug stock levels	Strengthen surveillance; ensure drug availability
Environmental Baseline	Limited safe water; flood-prone; blocked drainage	Same	□–● Moderate –High	Water quality tests; drainage inspections	Improve drainage; maintain sanitation
Nosocomial Infection Risk	Dust contamination in active clinic	Same	● Very High	IPC audits; PPE use; facility-acquired infection tracking	Strict IPC; isolate construction zones
Service Disruption	Temporary relocation → delayed care	Same	● Very High	Patient flow counts; referral tracking	Temporary clinics; phased works
Overcrowding	Partial closure → increased patient load	Same	□ High	Daily patient volume; waiting time	Patient flow management; triage
Workflow Disruption	Increased patient contact → cross-infection	Same	● Very High	Movement mapping; cross-infection reports	Zoning; controlled patient routing
WASH Interruption	Water interruption	Same	● Very High	Water logs; hand hygiene compliance	Backup water;

	→ poor hygiene				maintain sanitation
Waste Management Disruption	Exposure to infectious waste	Same	● Very High	Waste segregation checks; disposal frequency	Strict segregation; safe disposal
Air Quality (Dust)	Civil works → dust inhalation	Same	□ Moderate	Dust barrier checks; respiratory complaints	Dust barriers; source control
Noise Exposure	Machinery noise → stress	Same	□ Low–Moderate	Noise readings; staff feedback	Noise scheduling; barriers
Overall Renovation Mitigation	IPC strengthening; temporary service continuity; waste control	Same	—	Compliance audits; contractor supervision	Enhanced IPC; continuous water; safe waste handling

6.3.3 Operations Phase - Primary Healthcare Centres (Agbowa, Ejirin, Solu-Alade, Orimedu)

Category	**Agbowa PHC (New Construction)**	**Orimedu PHC (New Construction)**	**Ejirin PHC (Refurbishment)**	**Solu-Alade PHC (Refurbishment)**	**Impact Rating**	**Monitoring Indicators**	**Mitigation Measures**
Baseline – Disease Burden	High malaria; typhoid; upper respiratory tract infectio	Same	Same	Same	● High	Weekly disease surveillance; drug stock levels	Strengthen surveillance; ensure drug availability; community

	ns; maternal/child health demands						health outreach
Baseline – Environmental Conditions	Coastal environment; high water table; flood-prone zones; poor waste disposal	Same	Older structure; potential asbestos history; drainage constraints	Same	□–● Moderate–High	Water quality tests; drainage inspections; waste audits	Improve drainage systems; ensure safe water supply; routine environmental sanitation
Operational Service Delivery	High patient load expected upon opening	Same	Increased demand due to upgraded facilities	Same	□ High	Patient flow counts; waiting time; staff workload	Triage system; appointment scheduling; adequate medical staffing
IPC & Infection Control	New facility requires strict operational IPC	Same	Heightened IPC protocols required during/post-	Same	● High	IPC audits; PPE availability; hand hygiene	Routine IPC audits; PPE availability; staff training; hand

	protocols		refurbishment			compliance	hygiene promotion
WASH Reliability	Continuous water supply required; sanitation systems must be functional	Same	Same	Same	● High	Water availability logs; WASH functionality checks	Maintain solar/pump water systems; ensure functional toilets/handwashing stations; backup water tanks
Waste Management	New medical waste management systems must be consistently utilized	Same	Maintained and upgraded waste systems	Same	● High	Waste segregation checks; disposal frequency	Enforce segregation (infectious vs. general); routine medical waste pickup; staff training
Power Supply & Equipment	Reliable power needed for cold chain & diagnostics	Same	Same	Same	□ Moderate	Power uptime logs; generator/solar functionality	Generator maintenance; solar backup systems; routine equipment servicing

Environmental Health Risks	Coastal flooding and high water table impacts	Same	Drainage blockage risks; coastal environmental pressures	Same	□–● Moderate–High	Flood monitoring; drainage clearing frequency	Routine clearing of drains; flood preparedness measures; community sanitation
Staffing & Capacity	Increased workload during initial scale-up phase	Same	Same	Same	□ High	Staff attendance; patient-to-provider ratio	Adequate staffing; shift planning; continuous professional training
Overall Operational Requirements	Strengthen IPC; ensure WASH reliability; routine maintenance; waste segregation; staff training; emergency	Same	Same	Same	—	Compliance audits; facility supervision	Same measures apply across all four Group 5 PHCs in Ibeju-Lekki

	prepare dness						

CHAPTER 7 – ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

7.1 General Introduction (Final Refined Version)

The Environmental and Social Management Plan (ESMP) provides the operational framework for implementing the mitigation measures identified in Chapter 6 for the four PHC facilities in the Epe/Ibeju-Lekki Axis: Agbowa, Orimedu, Ejirin, and Solu-Alade. It translates the site-specific risks into clear actions, responsibilities, monitoring requirements, and performance indicators across all project phases—pre-construction, construction, and operation.

The ESMP ensures compliance with the AfDB Integrated Safeguards System (ISS), FMEnv EIA Act, NESREA regulations, LASEPA environmental standards, IFC Performance Standards, WHO healthcare waste and IPC guidelines, and ILO labour and OHS conventions. It establishes a structured mechanism for:

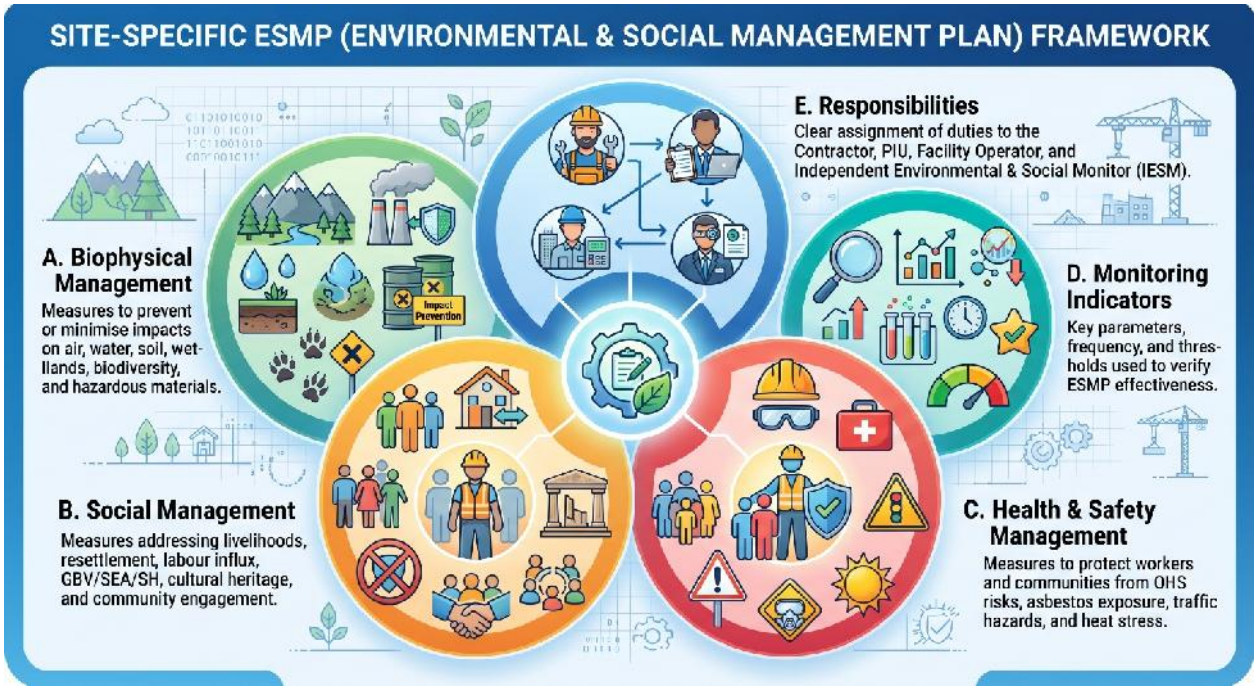
- Managing environmental and social risks at each site
- Ensuring contractors and facility operators implement mitigation measures
- Monitoring performance through measurable indicators
- Protecting community health, safety, and security
- Ensuring transparency, accountability, and continuous improvement

Because each PHC site has distinct environmental and social sensitivities—such as coastal wetland dynamics, lagoon fisheries, high traffic corridors, and asbestos-containing structures—the ESMP is site-specific, ensuring that risks are managed precisely where they occur.

7.2 Site-Specific ESMPs for the Four PHC Sites

This section presents site-specific ESMPs, each structured into:

- **A. Biophysical Management:** Measures to prevent or minimise impacts on air, water, soil, wetlands, biodiversity, and hazardous materials.
- **B. Social Management:** Measures addressing livelihoods, resettlement, labour influx, GBV/SEA/SH, cultural heritage, and community engagement.
- **C. Health & Safety Management:** Measures to protect workers and communities from OHS risks, asbestos exposure, traffic hazards, and heat stress.
- **D. Monitoring Indicators:** Key parameters, frequency, and thresholds used to verify ESMP effectiveness.
- **E. Responsibilities:** Clear assignment of duties to the Contractor, PIU, Facility Operator, and Independent Environmental & Social Monitor (IESM).



7.1: Site-Specific ESMP (Environmental & Social Management Plan) Framework

7.2.1 Agbowa – Site-Specific ESMP

A. Biophysical Management

Impact	ESMP Action	Performance Indicator
Flooding / coastal erosion	Elevated-platform design; oversized drainage (1:100-yr + 30%)	Zero flood-related damage to works
Creek contamination	Sediment traps; bunded fuel storage; no wash-water discharge	TSS $\le$ 30 mg/L; no hydrocarbons in creek
Asbestos (aged ancillary structures)	Licensed survey; abatement if confirmed; air monitoring	$\le$ 0.1 f/ml

B. Social Management

Impact	ESMP Action	Performance Indicator
Fisheries/trading livelihoods	RAP compensation; livelihood continuity support	PAP satisfaction $\ge$ 80%
Labour influx / trans-border mobility	Worker camp rules; CoC; local-hiring priority	Zero conflicts
GBV/SEA/SH	Confidential GRM; survivor-centred response	100% workers trained

C. Health & Safety Management

Impact	ESMP Action	Performance Indicator
Traffic risks (Owode–Apa corridor)	Deploy trained marshals; enforce speed limits; establish diversion routes; install warning signage	Zero traffic incidents
Asbestos OHS (pending survey)	Use P3 respirators; restrict access; wet-method handling; controlled removal by licensed contractor	100% PPE compliance
Working at height	Use fall-arrest systems; scaffolding inspections; edge protection; permit-to-work system	Zero fall incidents; 100% permit compliance
Confined space entry	Gas testing; ventilation; standby attendant; confined-space entry permit; rescue plan	Zero confined-space incidents
Electrical safety	Lock-out/tag-out (LOTO); insulated tools; elevated electrical installations; routine inspections	Zero electrical shocks
Chemical safety (fuels, reagents, solvents)	Bunded storage; SDS availability; spill kits; chemical handling training; emergency showers	Zero major spills; 100% SDS availability
Lone working	Lone-worker protocol; communication devices; check-in/check-out system	100% compliance with lone-worker procedure
Hazardous materials & hazardous waste	Segregation; labeled containers; licensed disposal; secure storage; no community exposure	Zero uncontrolled releases; 100% compliant manifests
Community health & safety (CHS)	Secure work zones; fencing; signage; controlled access; community awareness; safe routing of trucks	Zero community incidents; no public exposure to hazards

D. **Monitoring Indicators:** Creek water quality monthly; noise weekly (addressing the non-compliant daytime readings recorded at all three Agbowa sampling points); traffic incidents monthly; local-hiring rate monthly; GRM resolution $\le$ 14 days.

E. **Responsibilities:** Contractor – sediment/spill control, traffic management, labour-influx controls; PIU – RAP delivery, fisheries livelihood support, GBV oversight; IESM – quarterly audits.

7.2.2 Solu-Alade – Site-Specific ESMP

Key Sensitivities: Asbestos-suspected roofing, flood-prone zone, localized PM10, PM2.5 exceedance (SP1), localized noise exceedance (SP2), riverine/wetland fringe, GBV with border-proximity reporting barriers.

A. Biophysical Management

Impact	**ESMP Action**	**Performance Indicator**
Asbestos (suspected roofing)	Licensed asbestos abatement; wet-method removal; HEPA vacuums; continuous air monitoring	≤ 0.1 f/ml
Flooding / drainage congestion	Oversized drainage channels; elevated slabs and electrical installations	Zero flood-related service interruption
Localized dust exceedance (SP1)	Water spraying; covered stockpiles; strict source control	$PM_{10} \leq 50\ \mu g/m^3$
Localized noise exceedance (SP2)	Noise barriers; scheduling of noisy works; equipment maintenance	≤ 55 dB(A)
Solid waste generation (construction & operations)	Segregation at source; covered skips; daily evacuation; disposal at LAWMA-approved facility	100% compliant disposal manifests
Sludge waste (cleaning, maintenance, wastewater systems)	Dewatering; safe containment; disposal through licensed waste contractors	Zero uncontrolled sludge discharge
Wastewater discharge (greywater, wash-down water)	Temporary holding tanks; filtration; discharge only to approved drains; no release to creek	TSS ≤ 30 mg/L; zero untreated discharge
Chemical spills (fuels, solvents, reagents)	Bunded storage; spill kits; trained spill response team; immediate containment	Zero major spills; response ≤ 30 minutes
Aqua ecology & ecosystem services (Epe/Lekki Lagoon)	Silt curtains; sediment traps; no in-water works during sensitive periods; prohibit discharge; maintain riparian vegetation; protect fisheries access	≤ 0.1 f/ml

B. Social Management

Impact	ESMP Action	Performance Indicator
GBV/SEA/SH; border-proximity reporting barriers	Confidential, anonymous-option GRM	100% workers trained

C. Health & Safety Management

Impact	ESMP Action	Performance Indicator
Asbestos OHS	P3 respirators; Type 5 coveralls; restricted access	100% PPE compliance
Continuity of clinical services	Phased works; temporary service arrangements	Zero service interruption days unmanaged

D. **Monitoring Indicators:** Asbestos air monitoring continuous; PM10/PM2.5 at SP1 daily during works; noise at SP2 weekly; GRM resolution ≤ 14 days.

E. **Responsibilities:** Specialist contractor – asbestos abatement; Contractor – dust/noise control, phased works coordination; PIU – livelihood restoration; IESM – compliance verification.

7.2.3 Ejirin – Site-Specific ESMP

Key Sensitivities: Epe/Lekki Lagoon and coastal water system waterfront, aged infrastructure with asbestos risk pending survey, fisheries livelihoods, localized noise exceedance (SP3), GBV/SEA/SH.

A. Biophysical Management

Impact	ESMP Action	Performance Indicator
Asbestos (aged structures, pending survey)	Licensed survey; abatement if confirmed; air monitoring	≤0.1 f/ml
Epe/Lekki coastal water contamination	Sediment traps; bunded storage; no discharge	TSS ≤ 30 mg/L; zero spills
Localized noise exceedance (SP3)	Noise barriers; scheduling	≤ 55 dB(A)

B. Social Management

Impact	ESMP Action	Performance Indicator
GBV/SEA/SH	Confidential GRM; survivor-centred response	100% workers trained

C. Health & Safety Management

Impact	ESMP Action	Performance Indicator
Fuel spill / waterfront OHS	Emergency spill response plan; bunded storage; life jackets where applicable	Response ≤ 30 minutes; zero spills
General OHS risks across project life	Implement and enforce a comprehensive OHS Management Plan covering: electrical safety; lock-out/tag-out; lone-working protocols; confined-space entry; working-at-height controls; permit-to-work system; toolbox talks; supervision; incident reporting	Zero lost-time incidents (LTI); 100% permit compliance; Daily toolbox talks conducted
Asbestos OHS (pending survey)	PPE; restricted access	100% PPE compliance

D. **Monitoring Indicators:** Creek water quality monthly; fuel storage inspections weekly; noise at SP3 weekly; GRM resolution $\le$ 14 days.

E. **Responsibilities:** Contractor – spill prevention, sediment control, noise management; PIU – livelihood restoration; IESM – compliance verification.

7.3 ESMP Summary Matrix (Epe/Ibeju-Lekki Axis)

Site	Impact Category	Key Unmitigated Impact	Mitigation Measure	Hierarchy	Significance	Responsible
Agbowa	Biophysical	Wetland/soil disturbance	30 m buffer; silt fencing	Avoid/Minimise	□	Contractor
	Health & Safety	Construction site accidents	Mandatory PPE; site fencing	Avoid	●	Contractor
Orimedu	Biophysical	Coastal erosion & runoff	Silt traps; drainage protection	Minimise	□	Contractor

	Social	Local employment expectation	Localized recruitment policy	Restore	□	PIU
Ejirin	Biophysical	Demolition waste accumulation	Segregation & LAWMA disposal	Minimise	□	Contractor
	Health & Safety	Dust & structural OHS risks	Barriers; respirators	Avoid	●	Contractor
Solu-Alade	Biophysical	Uncontrolled surface runoff	Temporary diversion channels	Minimise	□	Contractor
	Social	Public safety near work zones	Perimeter hoarding; notice boards	Avoid	□	Contractor / PIU

7.4 Institutional Responsibilities

This section defines the institutional roles required to implement the ESMP across the four PHC sites. Clear responsibilities ensure accountability, regulatory compliance, and effective environmental and social performance throughout all project phases.

7.5.1 Institutional Framework Overview

The ESMP involves coordinated action among federal and state regulators, the PIU, contractors, facility operators, and independent monitors.

Entity	Role	Key Responsibilities
FMEnv	Federal regulator	EIA certification, compliance inspections
LASEPA	State regulator	Permits (air, noise, water), inspections
LAWMA	Waste regulator	Medical & general waste collection, manifests
PIU (LSMoH)	ESMP oversight	Contractor compliance, GRM, reporting, RAP oversight

Contractor(s)	ESMP implementation	CESMP, monitoring, OHS, GBV, waste, community liaison
Facility Operator	Operational ESMP	HMWMP, IPC, wastewater, GRM, maintenance
Licensed Asbestos Contractor	Hazardous materials	Surveys, abatement, air monitoring, disposal
IESM	Independent oversight	Quarterly audits, compliance verification
LGAs/CDAs	Local support	Community entry, PAP verification, GRM
AfDB	Financier	Safeguard supervision, compliance enforcement

7.5.2 Detailed Roles and Responsibilities

A. PIU (Lagos State Ministry of Health)

Brief explanation: The PIU ensures full ESMP implementation, regulatory compliance, and reporting.

Key responsibilities include:

- Enforcing ESMP, CESMP, RAP, HMWMP, GBV Action Plan
- Managing GRM and stakeholder engagement
- Ensuring contractors meet E&S obligations
- Coordinating with regulators
- Overseeing climate-resilient design
- Reporting to AfDB and FMEnv
- Capacity building for facility operators

B. Contractor(s)

Brief explanation: Contractors implement day-to-day ESMP actions during construction.

Key responsibilities include:

- Preparing CESMP
- Conducting air, noise, water monitoring
- Implementing dust, noise, erosion, spill, and waste controls
- Managing labour influx, OHS, GBV, traffic
- Reporting incidents within 24 hours
- Maintaining community liaison

C. Facility Operator (Operational Phase)

Brief explanation: Operators ensure ESMP compliance during facility operation.

Key responsibilities include:

- Implementing HMWMP and IPC
- Managing wastewater and energy systems
- Maintaining facility infrastructure
- Operating GRM
- Reporting quarterly to PIU

D. Independent Environmental & Social Monitor (IESM)

Brief explanation: The IESM provides independent oversight.

Key responsibilities include:

- Quarterly audits
- Compliance verification
- Non-compliance reporting
- Effectiveness assessment
- RAP verification
- Reporting to AfDB

7.5 Monitoring Plan

Monitoring is a critical component of the ESMP, ensuring that mitigation measures are implemented effectively and that environmental and social performance across the four PHC sites—Omolaiye, Eruwen, Olorunda, and Agura—meets the requirements of AfDB ISS, FMEnv, NESREA, and LASEPA.

Monitoring indicators have been selected based on the site-specific risks identified in Chapter 5 and the mitigation measures outlined in Chapter 6. These indicators cover all relevant domains, including air quality, noise, water quality, soil erosion, waste management, labour and GBV risks, biodiversity protection, and climate resilience.

The monitoring plan ensures early detection of deviations, timely corrective actions, and continuous improvement throughout project implementation.

7.6.1 Monitoring Indicators

This section presents the full set of monitoring indicators for the four PHC sites. Each indicator specifies:

- What is monitored (impact/parameter)
- Why it is monitored (risk significance)
- How it is monitored (method)
- Where it is monitored (site-specific locations)
- How often (frequency)

- Who is responsible (Contractor, PIU, Facility Operator, IESM)
- When corrective action is required (trigger thresholds)

This consolidated monitoring matrix provides a complete, auditable, AfDB-compliant monitoring system that supports effective ESMP implementation.

Site-Specific Examples

- **Omolaiye:** Water quality (TSS, hydrocarbons), asbestos air monitoring (if confirmed)
- **Eruwen:** Asbestos fibres (confirmed), PM10, erosion monitoring
- **Olorunda:** Wetland water quality, RAP implementation monitoring
- **Agura:** PM10, noise, traffic incidents, GBV training

7.6.2 Monitoring Locations

Monitoring locations are selected based on proximity to sensitive receptors, ensuring accurate measurement of potential impacts.

Site-Specific Monitoring Locations

- **Solu-Alade:** Nearest residential buildings and coastal front (air quality, noise); water bodies downstream (water quality); wetland buffer zone (biodiversity).
- **Orimedu:** Residences adjacent to coastal and construction zones (asbestos, air quality, noise).
- **Agbowa:** Nearest residential buildings and market interface areas (air quality, noise); wetland downstream sampling points (water quality).
- **Ejirin:** Nearest residential buildings and coastal access zones (air quality, noise).

These locations ensure that monitoring captures real exposure levels for communities and ecosystems.

7.6.3 Corrective Action Procedure

When monitoring results exceed established thresholds, corrective actions must be implemented immediately to prevent environmental or social harm. The procedure ensures rapid response, accountability, and compliance with AfDB ISS.

Corrective Action Steps

- Identify exceedance through monitoring data, inspections, or GRM complaints.
- Notify the PIU (verbal within 24 hours, written within 48 hours).
- Investigate root cause to determine the source of the exceedance.
- Implement immediate corrective action (e.g., increase watering, stop noisy activity).
- Develop long-term corrective plan where structural improvements are required.
- Verify effectiveness through follow-up monitoring.
- Report to AfDB for serious incidents or repeated exceedances.

- Update the ESMP if systemic issues are identified.

Examples of Corrective Actions

- **PM10 exceedance:** Increase watering frequency; cover stockpiles.
- **Noise exceedance:** Install temporary noise barriers; reschedule activities.
- **TSS exceedance:** Repair silt fences; clean sediment traps.
- **Asbestos exceedance:** Stop work; improve containment; re-monitor.

TABLE 7.1 -- ENVIRONMENTAL & SOCIAL MONITORING MATRIX (FOUR PHC SITES)

(Impact → Mitigation → Indicator → Parameter → Method → Frequency → Responsibility → Trigger)

A. AIR QUALITY MONITORING

Site	Impact	Mitigation	Indicator	Parameter	Method	Frequency	Responsibility	Trigger
Agbowa	Dust	Water spraying	PM10	PM10 (µg/m³)	Real-time monitor	Daily	Contractor	>50 µg/m³
Solu-Alade	Dust	Water spraying	PM10	PM10 (µg/m³)	Real-time monitor	Daily	Contractor	>50 µg/m³
Orimedu	Dust	Water spraying	PM10	PM10 (µg/m³)	Gravimetric	Weekly	Contractor	>50 µg/m³
Ejirin	Dust	Water spraying	PM10	PM10 (µg/m³)	Gravimetric	Weekly	Contractor	>50 µg/m³
Solu-Alade	Asbestos (suspected)	Licensed abatement	Asbestos fibres	f/ml	PCM/TEM	Continuous	Specialist	>0.1 µg/m³
Orimedu	Asbestos (suspected)	Licensed abatement	Asbestos fibres	f/ml	PCM/TEM	Continuous	Specialist	>0.1 µg/m³

B. NOISE MONITORING

Site	Impact	Mitigation	Indicator	Parameter	Method	Frequency	Responsibility	Trigger
Agbowa	Construction noise	Barriers, scheduling	Noise level	Leq dB(A)	Type 1 meter	Weekly	Contractor	>55dB (A)
Solu-Alade	Construction noise	Barriers, scheduling	Noise level	Leq dB(A)	Type 1 meter	Weekly	Contractor	>55dB (A)
Orimedu	Equipment noise	Silencers	Noise level	Leq dB(A)	Type 2 meter	Weekly	Contractor	>55dB (A)
Ejirin	Equipment noise	Silencers	Noise level	Leq dB(A)	Type 2 meter	Weekly	Contractor	>55 dB(A)

C. WATER QUALITY MONITORING

Site	Impact	Mitigation	Indicator	Parameter	Method	Frequency	Responsibility	Trigger
Solu-Alade	Coastal/ Wetland contamination	Bunded storage	Wetland/ Coastal quality	TSS, pH, hydrocarbons	Lab analysis	Monthly	Contractor	TSS > 30 mg/L
Orimedu	Coastal/ Wetland contamination	Bunded storage	Wetland/ Coastal quality	TSS, pH, hydrocarbons	Lab analysis	Monthly	Contractor	TSS > 30 mg/L
All sites	Sewage	Portable toilets	Coliforms	CFU/100ml	Membrane filtration	Monthly	Contractor	>0 CFU/100ml

D. SOIL EROSION & SEDIMENT CONTROL

Site	Impact	Mitigation	Indicator	Parameter	Method	Frequency	Responsibility	Trigger
Orimedu	Erosion	Silt fences	Fence condition	Tears, undercutting	Inspection	Weekly	Contractor	Any damage
Solu-Alade	Erosion	Silt fences	Fence condition	Tears, undercutting	Inspection	Weekly	Contractor	Any damage
Orimedu	Sediment runoff	Sediment traps	Trap condition	% full	Inspection	Weekly	Contractor	>50% full
Solu-Alade	Sediment runoff	Sediment traps	Trap condition					

E. WASTE MANAGEMENT

Site	Impact	Mitigation	Indicator	Parameter	Method	Frequency	Responsibility	Trigger
All sites	Poor segregation	Segregated bins	Segregation	% correct	Inspection	Daily	Contractor	<90%
Solu-Alade	Asbestos waste	Licensed disposal	Manifest	Completeness	Review	Per load	Specialist	Missing manifest
Orimedu	Asbestos waste	Licensed disposal	Manifest	Completeness	Review	Per load	Specialist	Missing manifest
All sites	Medical waste	LAWMA disposal	Manifest	LAWMA receipts	Review	Monthly	Facility Operator	Missing receipt

F. LABOUR & GBV MONITORING

Site	Impact	Mitigation	Indicator	Parameter	Method	Frequency	Responsibility	Trigger
Agbowa	Labour influx	Camp rules	Local hiring	% local	Records	Monthly	Contractor	<50%
All sites	OHS	PPE	PPE compliance	% PPE	Inspection	Daily	Contractor	<95%
Agbowa	GBV	GBV Action Plan	GBV training	% trained	Records	Monthly	Contractor	<100%
All sites	GBV cases	GRM	GBV resolution	% resolved	GRM log	Monthly	PIU	Any unresolved

G. COMMUNITY HEALTH & SAFETY

Site	Impact	Mitigation	Indicator	Parameter	Method	Frequency	Responsibility	Trigger
Agbowa	Traffic	Marshals	Traffic incidents	# incidents	Log	Monthly	Contractor	Any incident
All sites	Access	Fencing	Access complaints	# complaints	GRM	Monthly	PIU	>1 complaint

H. BIODIVERSITY & WETLAND MONITORING

Site	Impact	Mitigation	Indicator	Parameter	Method	Frequency	Responsibility	Trigger
Solu-Alade	Wetland / Coastal interface	50 m buffer	Buffer integrity	Encroachment	GPS	Weekly	Contractor	Any encroachment

Orimedu	Wetland / Coastal interface	50 m buffer	Buffer integrity	Encroachment	GPS	Weekly	Contractor	Any encroachment
Agbowa	Wetland / Coastal interface	50 m buffer	Buffer integrity	Encroachment	GPS	Weekly	Contractor	Any encroachment
All sites	Revegetation	Native planting	Survival rate	% survival	Survey	3, 6, 12 months	Contractor	<80%

I. CLIMATE RESILIENCE

Site	**Impact**	**Mitigation**	**Indicator**	**Parameter**	**Method**	**Frequency**	**Responsibility**	**Trigger**
All sites	Flooding	Drainage upgrades	Flood events	# events	Inspection	After rain	PIU	Any flooding
All sites	Energy	Solar PV	Solar output	kWh / Performance ratio	Meter reading	Monthly	Facility Operator	<80% expected output

7.6 Environmental & Social Management Actions

This section consolidates all ESMP actions across biophysical, social, and health & safety domains for the four PHC sites (Agbowa, Ejirin, Solu-Alade, Orimedu).

7.6.1 Biophysical Management Actions

Actions to protect wetlands, coastal/lagoon ecosystems, air quality, soil, water, biodiversity, and hazardous materials.

- Coastal and wetland buffers (Solu-Alade, Orimedu, Agbowa)
- Asbestos abatement (Solu-Alade, Orimedu)
- Erosion control (Orimedu, Solu-Alade)
- Dust/noise control (all sites)

7.6.2 Social Management Actions

Actions to protect livelihoods, manage labour influx, prevent GBV/SEA/SH, and safeguard cultural heritage.

- Labour influx management (Agbowa, Ejirin)
- GBV Action Plan and livelihood screening (Agbowa, Ejirin, Solu-Alade, Orimedu)

7.6.3 Health & Safety Management Actions

Actions to protect workers and communities from OHS risks.

- Asbestos OHS controls (Solu-Alade, Orimedu)
- Community safety fencing (all sites)

7.7 Stakeholder Engagement & GRM

Stakeholder engagement ensures transparency and community participation. The GRM provides accessible channels for resolving grievances.

7.7.1 Stakeholder Engagement

Engagement activities include consultations, disclosure meetings, and community liaison.

- Quarterly community meetings
- Disclosure of construction schedules
- Engagement on coastal and wetland conservation (Solu-Alade, Orimedu, Agbowa)

7.7.2 Grievance Redress Mechanism (GRM)

The GRM provides confidential, accessible, and timely resolution of grievances.

- Multiple entry points (hotline, suggestion boxes, Community Liaison Officers)
- GBV-sensitive reporting pathways
- Acknowledgement within 48 hours
- Resolution within 14 days
- Quarterly reporting to AfDB

7.8 Capacity Building & Training

Capacity building ensures that PIU, contractors, and facility operators can effectively implement the ESMP.

Training Topics

- ESMP implementation
- OHS and emergency response
- GBV/SEA/SH prevention
- Hazardous & Medical Waste Management Plan (HMWMP) and Infection Prevention & Control (IPC)
- Biodiversity protection
- Spill response
- Asbestos handling (Solu-Alade, Orimedu)

7.9 Reporting Framework

Reporting ensures accountability and continuous improvement.

Reporting Requirements

- **Contractor →:** Weekly E&S reports
- **Facility Operator →PIU:** Monthly operational reports
- **PIU →AfDB/FMEnv:** Monthly and annual reports
- **Independent Environmental and Social Monitor (IESM) →AfDB:** Monthly audit reports

Reports Include

- Monitoring data
- GRM statistics
- Incidents and corrective actions
- Compliance status
- Training records

7.10 Emergency Preparedness And Response Plan (EPRP)

7.10.1 Emergency Scenarios

Table 7.2 – Emergency Scenarios (Epe / Ibeju-Lekki Axis)

Emergency Scenario	Likelihood	Potential Consequences	Affected Sites	Responsible
Fire (construction site, facility)	Medium (construction – electrical, welding, fuel storage; operation – kitchen, electrical, incinerator)	Injury, fatality, property damage, service disruption	All 4 sites (Agbowa, Ejirin, Solu-Alade, Orimedu)	Contractor (construction); Facility operator (operation)
Flood (heavy rain, blocked drains)	High (rainy season April–October; high-risk sites: Solu-Alade,	Facility inundation, equipment damage, service disruption, injury	Solu-Alade, Orimedu, Agbowa, Ejirin	Contractor (construction – temporary drainage); Facility

	Orimedu – coastal/wetland interface)			operator (operation – flood barriers, elevated electricals)
Medical emergency (worker injury, community member injury)	Medium (construction – OHS risks; operation – clinical emergencies)	Injury, fatality	All 4 sites	Contractor (first aid, transport to clinic); Facility operator (clinical care)
Chemical spill (fuel, oil, chemicals)	Medium (construction – fuel storage; operation – laboratory)	Environmental contamination (soil, water), injury	All 4 sites (especially coastal/wetland interface locations)	Contractor (spill kit, containment); Facility operator (spill kit, containment)
Asbestos release (Solu-Alade / Orimedu – during abatement if containment fails)	Low (if proper abatement) but high consequence	Worker/community exposure to airborne fibres $\rightarrow$ cancer (20–40 years latency)	Solu-Alade, Orimedu (if confirmed)	Licensed abatement contractor
GBV incident (SEA, SH, GBV in community)	Medium to High (if no mitigation)	Survivor trauma, STI, pregnancy, community protest, project shutdown	All 4 sites (labour influx interface)	Contractor (worker Code of Conduct); PIU (GBV Action Plan, referral pathways)

Community protest (over screening/resettlement, GBV, asbestos, employment)	Medium	Project shutdown, property damage, injury, reputational damage	Axis sites	PIU (safeguard implementation, GRM, community liaison)
Security incident (theft, vandalism, armed robbery)	Medium (theft/vandalism – all sites; armed robbery – coastal/urban sites)	Property loss, injury, project delay	All 4 sites	Contractor (security guards, fencing, lighting); PIU (coordination with police)

7.10.2 Emergency Response Procedures

A. Fire Emergency

Step	Action	Responsible
1	Raise alarm (shout, fire alarm bell, call "Fire!")	Anyone
2	Evacuate building/area (assembly point)	All personnel
3	Call fire service (LASG Fire Service: 112)	Site supervisor
4	Attempt to extinguish small fire (if trained, using appropriate extinguisher – water for wood/paper, CO2 for electrical, dry powder for fuel)	Trained fire marshal
5	Do not enter if fire large or smoke thick	All personnel
6	Account for all personnel (roll call at assembly point)	Site supervisor
7	First aid for injured (burns, smoke inhalation)	First aider
8	Report to PIU and AfDB (within 24 hours)	Contractor / PIU

B. Flood Emergency

Step	Action	Responsible
1	Monitor weather forecast (rainy season)	Site supervisor
2	If heavy rain forecast, prepare: move equipment to higher ground, deploy flood barriers (if available), clear drains	Site supervisor
3	If flooding occurs: shut off electrical supply (main breaker)	Electrician

4	Evacuate to higher ground (assembly point)	All personnel
5	Do not walk or drive through floodwater (depth unknown, hidden hazards, electrical risk)	All personnel
6	After flood: inspect building (structural damage, electrical safety), pump out water (if safe), clean and disinfect (mud, sewage), inspect equipment (damage)	Site supervisor / Facility operator
7	Report to PIU and AfDB (within 24 hours)	Contractor / PIU / Facility operator

C. Chemical Spill (Fuel, Oil, Chemicals)

Step	Action	Responsible
1	Evacuate area (10 m radius)	Anyone
2	Wear PPE (gloves, goggles, coverall, respirator if volatile)	Spill responder
3	Contain spill (spill kit – absorbent booms around spill, socks to prevent spread)	Spill responder
4	Absorb spill (absorbent pads, granules)	Spill responder
5	Collect contaminated absorbent in hazardous waste bag (labeled)	Spill responder
6	Dispose through licensed hazardous waste contractor	Contractor
7	If spill reached water body, notify LASEPA and NOSDRA (within 24 hours)	Contractor / PIU
8	Report to PIU and AfDB (within 24 hours)	Contractor

D. GBV Incident

Step	Action	Responsible
1	Ensure survivor safety (separate from perpetrator, safe space)	Any staff
2	Provide immediate medical care (if injuries) – refer to clinic/hospital (within 72 hours for PEP for HIV)	First aider / Facility operator
3	Inform GBV Specialist or female GRM focal point (confidentially)	Any staff
4	Offer psychosocial support (counselling) – refer to service provider (MIRA, Mirabel Centre, LASG Ministry of Women Affairs)	GBV Specialist
5	Offer legal support (if survivor wishes to pursue legal action) – refer to legal aid (LASG, NGO)	GBV Specialist

6	Investigate (without requiring survivor to provide evidence if they choose not to)	PIU / Contractor
7	Sanction perpetrator (warning, suspension, termination, legal prosecution)	Contractor / PIU
8	Report to AfDB (within 48 hours for serious incident – sexual violence)	PIU
9	Do not retaliate against survivor (zero tolerance)	All personnel

E. Asbestos Release (Solu-Alade / Orimedu – if confirmed)

Step	Action	Responsible
1	Stop work immediately	Site supervisor
2	Evacuate area (100 m radius)	Site supervisor
3	Wear PPE (Type 5 coverall, P3 respirator)	Licensed abatement contractor
4	Improve containment (negative pressure enclosure, HEPA filtration)	Licensed abatement contractor
5	Air monitoring (PCM) – action level 0.1 f/ml	Licensed air monitoring consultant
6	If levels exceed 0.1 f/ml, continue containment improvements	Licensed abatement contractor
7	Notify PIU, LASEPA, and NESREA	PIU
8	Medical surveillance for exposed workers (chest X-ray, lung function)	Occupational health physician
9	Report to AfDB (within 24 hours)	PIU

7.10.3 Emergency Equipment and Supplies

Table 7.3 – Emergency Equipment and Supplies (Epe / Ibeju-Lekki Axis – per site)

Equipment/Supply	Quantity per Site (Construction)	Quantity per Facility (Operation)	Responsible	Inspection Frequency
Fire extinguisher (appropriate type – water, CO2, dry powder)	2–5 (depending on site size)	5–10 (depending on facility size)	Contractor / Facility operator	Monthly

First aid kit (stocked – bandages, antiseptic, gloves, etc.)	1 per 50 workers	1 per floor/department	Contractor / Facility operator	Weekly
Spill kit (absorbent pads, booms, socks, PPE, disposal bags)	1 per fuel storage area, 1 per refuelling point	1 per lab, 1 per chemical storage area	Contractor / Facility operator	Monthly
Emergency shower and eyewash station	1 per chemical storage area	1 per lab, 1 per chemical storage area	Contractor / Facility operator	Monthly
Emergency contact list (posted)	1 per site (posted in visible location)	1 per facility (posted)	Contractor / Facility operator	Quarterly (update)
Assembly point (designated, marked)	1 per site	1 per facility	Contractor / Facility operator	N/A
Emergency lighting (battery backup)	Not required (construction – daytime only)	Required (exit signs, emergency lights)	Facility operator	Monthly
Alarm system (fire alarm bell, siren)	1 per site	1 per facility	Contractor / Facility operator	Monthly (test)

7.10.4 Emergency Drills

Table 7.4 – Emergency Drills (Epe / Ibeju-Lekki Axis)

Drill Type	Frequency	Participants	Responsible
Fire drill	Quarterly (construction); annually (operation)	All workers (construction); all facility staff (operation)	Contractor (construction); Facility operator (operation)
Spill drill	Annually (construction)	Spill responders	Contractor
Evacuation drill	Annually (construction)	All workers	Contractor

GBV response drill (simulated referral)	Annually (construction, operation)	GRM focal points, GBV Specialist, service providers	PIU / GBV Specialist
Flood drill	Annually (before rainy season – March)	All workers (construction); facility staff (operation)	Contractor / Facility operator

Table 7.5 – Emergency Contact List (Example – Epe / Ibeju-Lekki Axis – to be completed for each site)

Emergency Service	**Contact Number**	**Location (nearest station/facility)**	**Notes**
Fire Service (LASG)	112	Nearest fire station (Epe / Lekki)	National emergency number
Police	112	Nearest police station	National emergency number
Ambulance (LASG)	112	Nearest hospital with ambulance (Epe General Hospital / Lekki medical centres)	National emergency number
LASEPA (emergency – pollution)	TBD	LASEPA head office, Ikeja	For chemical spills, air/coastal pollution complaints
NOSDRA (spill reporting)	TBD	Lagos office	For oil/fuel spills (mandatory reporting)
PIU Safeguards Team	TBD	Alausa, Ikeja	24-hour contact (to be established)
GBV referral – medical (within 72 hours)	TBD	Epe General Hospital / General Hospital Lekki (for PEP, STI treatment)	Nearest general hospital with PEP
GBV referral – psychosocial	TBD	Mirabel Centre, Lagos	Counselling
GBV referral – legal	TBD	LASG Ministry of Women Affairs	Legal aid

Nearest clinic/hospital	TBD	Site-specific (e.g., Epe General Hospital, local PHC)	For medical emergencies (worker, community)

7.11 ESMP Review and Update Mechanism

7.11.1 Review Triggers

The ESMP shall be reviewed and updated under the following circumstances:

Table 7.6: Review Triggers

Trigger	Responsible	Timeline	Approval Required
Annual review (scheduled)	PIU (with input from contractors, facility operators, IESM)	Annually (by end of Q1)	AfDB (if significant changes)
After a major incident (fatality, community protest, major spill)	PIU (with IESM)	Within 30 days of incident	AfDB
After a significant change in project scope (new sites, major design changes, new activities)	PIU	Within 30 days of change approval	AfDB
After a change in regulations (FMEnv, NESREA, LASEPA, AfDB ISS update)	PIU	Within 90 days of regulation change	AfDB (if significant)
Based on monitoring results (systematic non-compliance, exceedances not resolved)	PIU (with IESM)	Within 60 days of trend identification	AfDB (if significant)
Based on stakeholder feedback (GRM trends, community complaints)	PIU	Within 60 days of trend identification	AfDB (if significant)

7.11.2 Review Process

Table 7.7: Review Process

Step	Action	Responsible	Timeline
1	Trigger review (as above)	PIU / IESM / AfDB	As needed

2	Assemble review team (PIU E&S staff, contractor E&S officer, facility operator representative, IESM)	PIU	Within 7 days of trigger
3	Review ESMP against: monitoring data (KPIs), incident reports, GRM logs, IESM audit reports, stakeholder feedback, regulatory changes, project changes	Review team	Within 14 days
4	Identify gaps (mitigation measures not effective, new risks, obsolete measures)	Review team	Within 14 days
5	Propose revisions (updated mitigation measures, monitoring indicators, responsibilities, budget)	Review team	Within 21 days
6	Draft revised ESMP	PIU	Within 30 days
7	Submit to AfDB for review (if significant changes)	PIU	Within 7 days of draft completion
8	Approve revised ESMP	AfDB	Within 30 days of submission (if significant changes)
9	Communicate revised ESMP to contractors, facility operators, IESM, regulators	PIU	Within 7 days of approval
10	Update ESMP document (version control)	PIU	Within 7 days of approval

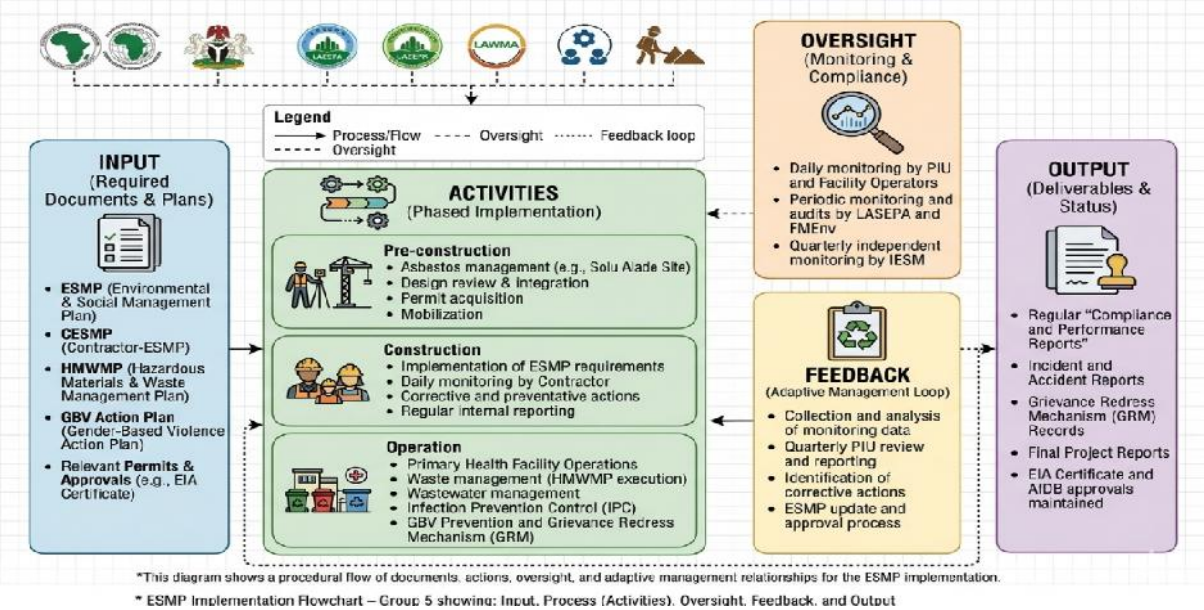


Figure 7.1: ESMP Implementation Flowchart – Group 5

7.11.3 Version Control

Table 7.8 Version Control

Version	Date	Author	Changes	Approval
1.0	March 2026	ESIA consultant (Multiple Development Services)	Initial ESMP (as part of ESIA for Epe / Ibeju-Lekki Axis)	FMEnv (EIA Certificate), AfDB
1.1	TBD (after annual review)	PIU	TBD	AfDB (if significant)

7.11 ESMP Budget & Implementation Schedule

7.11.1 Site-Specific ESMP Budget Breakdown

Table 7.9A provides a detailed breakdown of ESMP costs disaggregated by site, reflecting the distinct environmental and social sensitivities of each PHC facility across the Ibeju-Lekki Axis Group 5.

Table 7.9A: Site-Specific ESMP Budget Breakdown by Component

ESMP Component	Agbowa PHC (₦)	Ejirin PHC (₦)	Solu-Alade PHC (₦)	Orimedu PHC (₦)	Total (₦)	Total (US$)	Responsible
Air Quality Monitoring	2,500,000	4,000,000	2,500,000	2,500,000	11,500,000	7,667	Contractor / PIU

Noise Monitoring	2,000,000	2,000,000	2,000,000	2,000,000	8,000,000	5,333	Contractor
Coastal/Creek Water Quality Monitoring	4,000,000	4,000,000	—	4,000,000	12,000,000	8,000	Contractor
Asbestos Abatement	15,000,000	35,000,000	20,000,000	15,000,000	85,000,000	56,667	Specialist Contractor
Asbestos PPE	1,500,000	2,500,000	1,500,000	1,500,000	7,000,000	4,667	Contractor
Erosion / Sediment Control	3,000,000	3,000,000	3,000,000	3,000,000	12,000,000	8,000	Contractor
Dust Control	2,000,000	2,500,000	2,000,000	2,000,000	8,500,000	5,667	Contractor
Traffic Management	6,000,000	4,000,000	—	6,000,000	16,000,000	10,667	Contractor
Fuel Spill Prevention	2,000,000	5,000,000	2,000,000	5,000,000	14,000,000	9,333	Contractor
Waste Management	5,000,000	5,000,000	5,000,000	5,000,000	20,000,000	13,333	Facility Operator
Livelihood Restoration	45,000,000	35,000,000	40,000,000	40,000,000	160,000,000	106,667	PIU
GBV/SEA/SH Action Plan	8,000,000	6,000,000	7,000,000	7,000,000	28,000,000	18,667	PIU / Contractor
Labour Influx Management	6,000,000	2,000,000	2,000,000	4,000,000	14,000,000	9,333	Contractor

Stakeholder Engagement	4,000,000	4,000,000	4,000,000	4,000,000	16,000,000	10,667	PIU
GRM Implementation	2,000,000	2,000,000	2,000,000	2,000,000	8,000,000	5,333	PIU
IESM Quarterly Audits	10,000,000	10,000,000	10,000,000	10,000,000	40,000,000	26,667	IESM
Climate Resilience	25,000,000	20,000,000	20,000,000	25,000,000	90,000,000	60,000	Contractor / PIU
Sub-Total	143,000,000	137,000,000	131,000,000	142,000,000	553,000,000	368,667	—
Contingency (10%)	14,300,000	13,700,000	13,100,000	14,200,000	55,300,000	36,867	PIU
Sub-Total	157,300,000	150,700,000	144,100,000	156,200,000	608,300,000	405,533	—
Management & Supervision (15%)	23,595,000	22,605,000	21,615,000	23,430,000	91,245,000	60,830	PIU
TOTAL	180,895,000	173,305,000	165,715,000	179,630,000	699,545,000	466,363	—

Note: Values are approximate and based on Nigerian market rates (2026). Exchange rate: US$1 = ₦1,500 (indicative) This is applicable for all USD calculation in the ESIA report.

7.11.2 Site-Specific Budget Summary

Table 7.9B provides a summary of the Site-Specific ESMP Budget for Group 5.

Table 7.9B: Site-Specific ESMP Budget Summary

Site	Construction Phase (₦)	Construction Phase (US$)	Annual Operational (₦)	Annual Operational (US)
Agbowa PHC	180,895,000	120,597	15,000,000–20,000,000	10,000–13,333

Ejirin PHC	173,305,000	115,537	12,000,000–16,000,000	8,000–10,667
Solu-Alade PHC	165,715,000	110,477	12,000,000–16,000,000	8,000–10,667
Orimedu PHC	179,630,000	119,753	15,000,000–20,000,000	10,000–13,333
TOTAL	699,545,000	466,363	54,000,000–72,000,000	36,000–48,000

7.11.3 Site-Specific Justification for Budget Variations

Site	Key Cost Drivers	Rationale
Agbowa PHC	New construction foundation works; Traffic management; Coastal erosion controls; Localized community engagement	New construction footprint on developing rural/semi-urban terrain; expanding local population demands; heavy material transit.
Ejirin PHC	Asbestos abatement (roofing 50–100m²); Waterfront fuel spill prevention; Creek water quality monitoring	Historic coastal/riverine setting; high sensitivity of local aquatic ecology to construction runoff; aged roofing structures.
Solu-Alade PHC	Asbestos survey and localized remediation; Drainage enhancements; High water table and flood mitigation	Growing rural community setting; seasonal water table fluctuations requiring robust sub-drainage engineering.
Orimedu PHC	Elevated coastal foundation design; Coastal erosion and surge protection; Traffic management along coastal corridor	Direct exposure to high coastal vulnerability, sandy terrain, and sea-level rise dynamics along the Ibeju-Lekki corridor.

7.11.4 Implementation Schedule

Table 7.9C depicts the ESMP Implementation Schedule by Phase.

Table 7.9C: ESMP Implementation Schedule by Phase

Phase	Duration	Key Activities	Site-Specific Focus
Pre-Construction	6–12 months	Asbestos surveys (all 4 sites); CESMP approval; Stakeholder	All sites (asbestos surveys pending

		engagement; GRM activation; RAP/LRP screening	confirmation across legacy structures)
Construction	12–18 months per facility (staggered)	Full ESMP implementation and monitoring; GBV training; Coastal traffic management (Agbowa/Orimedu); Waterfront/creek protection (Ejirin/Orimedu); Quarterly IESM audits	**Agbowa/Orimedu:** New construction & foundation management **Ejirin/Solu-Alade:** Asbestos abatement & refurbishment protocols
Operation	Year 2 onward	HMWMP; IPC compliance; Wastewater management; Solar maintenance; Quarterly PIU reporting; Annual ESMP review	All sites (operational phase)

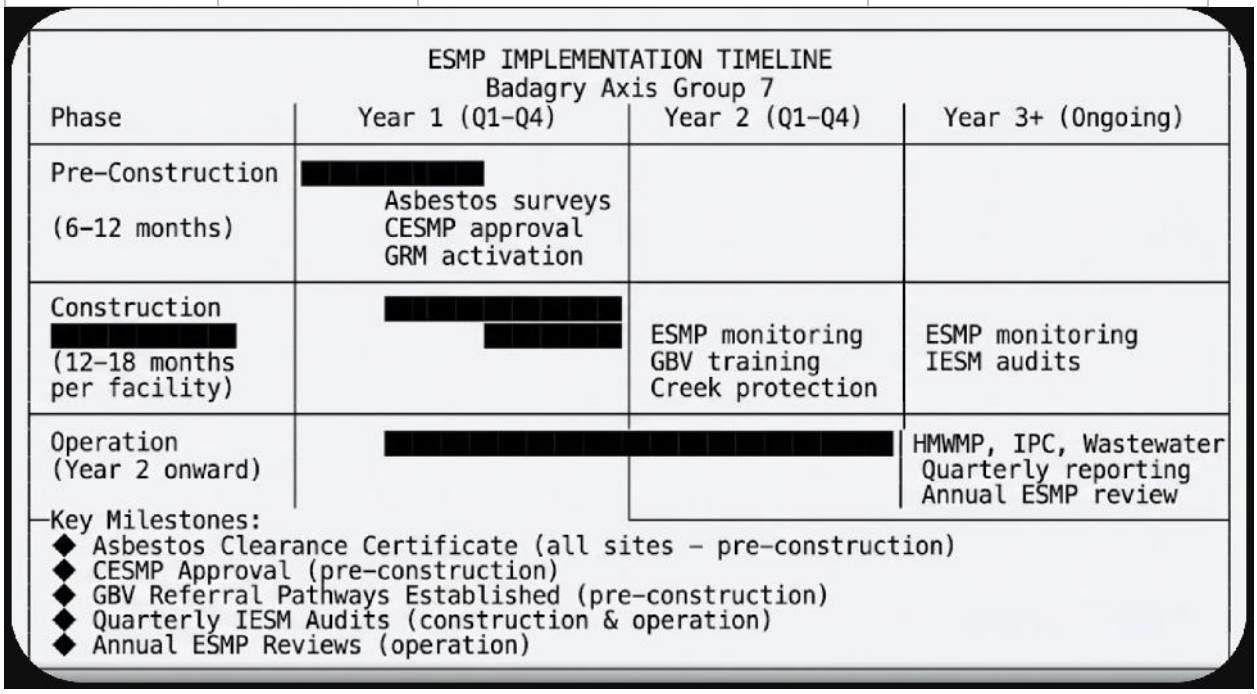


Figure 7.10 depicts the ESMP Implementation Timeline.

7.11.5 Budget Verification Statement

The ESMP budget presented in Section 7.10 has been developed specifically for the four PHC facilities in the Ibeju-Lekki Axis Group 5 (Agbowa, Ejirin, Solu-Alade, and Orimedu). The total budget (US$466,363 / approximately ₦699.55 million) reflects the following site-specific factors:

1. **Resettlement Action Plan (RAP) – Agbowa, Ejirin, Solu-Alade, Orimedu**

- No physical displacement is associated with the four Ibeju-Lekki Group 5 project sites. The resettlement baseline screening confirms that zero residential structures, zero businesses, and zero farmlands fall within the project footprints at Agbowa, Ejirin, Solu-Alade, and Orimedu. All land parcels are government-owned and gazetted.

2. **Asbestos Abatement (Ejirin & Solu-Alade)**
    - Ejirin PHC: Asbestos in roofing (50–100 m²)
    - Solu-Alade PHC: Aged infrastructure likely containing hazardous materials
    - Agbowa PHC & Orimedu PHC: Aged ancillary structures and new construction provisions
    - Licensed survey, wet removal, air monitoring, and hazardous waste disposal at all 4 sites
3. **Coastal and Marine Adaptations**
    - Elevated-platform and surge-resilient design at Orimedu and Agbowa to design out coastal flood risk
    - Shoreline and coastal margin protection at Ejirin and Solu-Alade (sediment traps, shoreline stabilisation)
    - Marine-grade materials to withstand salt-air corrosion along the Ibeju-Lekki corridor (aluminum-zinc roofing, anti-corrosive coatings)
4. **Flood-Resilient Infrastructure**
    - Oversized drainage (1:100-year storm + 30% climate factor) at all 4 sites
    - Elevated floor slabs and electrical panels
    - Flood contingency planning for Ejirin and Solu-Alade
5. **Labour Dynamics and Regional Management**
    - Enhanced labour management due to workforce mobility along the developing Ibeju-Lekki corridor
    - Extended GBV/SEA/SH prevention measures
6. **Water Quality and Coastal Protection**
    - Zero-discharge requirement to the coastal ecosystem and local water bodies
    - Bunded fuel storage and spill prevention
    - Sediment traps and no wash-water discharge
7. **Fisheries and Livelihood Restoration**
    - Coastal communities along Ejirin and Solu-Alade derive significant household income from fishing and aquatic ecosystems

- Livelihood restoration provisions reflect this local economic dependency

7.11.6 Total Estimated ESMP Cost

Below is the Total Estimated ESMP Cost:

Phase	Estimated Cost (₦)	Estimated Cost (US$)
Construction Phase	~699,545,000	~466,363
Annual Operational Phase	54,000,000 – 72,000,000	36,000 – 48,000

The budget estimates are based on Nigerian market rates, AfDB safeguard requirements, and typical ESMP implementation budgets for similar Category 1 health infrastructure projects in Nigeria.

Chapter 7 has presented the complete ESMP for Agbowa, Ejirin, Solu-Alade, and Orimedu PHCs, translating the Chapter 6 mitigation measures into an enforceable, site-specific framework covering institutional responsibilities, monitoring, corrective action, stakeholder engagement, capacity building, reporting, and a costed budget and schedule aligned with the axis ESMP totals.

7.12 Contractor ESMS Requirements

7.12.1 Contractor ESMP (C-ESMP)

All contractors (including sub-contractors) must prepare a Contractor Environmental and Social Management Plan (C-ESMP) based on this ESMP and tailored to their specific site(s) within the Ibeju-Lekki corridor and their specific scope of works.

C-ESMP Content Requirements (Ibeju-Lekki Aligned):

Section	Content (Tailored for Ibeju-Lekki Axis)
Project description	Specific Site(s) within the Ibeju-Lekki corridor; scope of work (e.g., clearing of coastal scrubland, sand filling, deep foundation works, marine structures, facility construction), duration, workforce size.
Environmental management	Coastal and Marine Management Plan: Erosion and Sediment Control Plan (specific to sandy soils and high rainfall, preventing runoff into lagoon/ocean); Dredging/Marine Works Protocol (if applicable – silt curtains, turbidity monitoring); Dust control plan (water spraying frequency, road surfacing); noise management plan (hours, barriers, notification to nearby communities/resorts); water quality protection plan (silt fences, sediment traps, spill prevention, concrete wash water containment – zero discharge to marine environment); waste management plan (segregation, recycling, disposal – including specific

	handling of hazardous materials related to marine fuels or construction chemicals); spill prevention and response plan (marine-grade spill kits, bunded storage located away from shoreline, mandatory staff training).
Social management	Labour Influx Management Plan (Appendix 2.4) (strict local hiring target of ≥60% unskilled labour from Ibeju-Lekki host communities to manage expectations); Code of Conduct (Appendix 13) (regarding interaction with local communities and traditional customs); worker accommodation (if camps are used, must be approved by PIU to avoid land disputes and ensure adequate sanitation); community liaison; Stakeholder Engagement Plan (specifically for managing relations with traditional rulers (Baales) and land owners); OHS plan (HIRA, safe work procedures, PPE, training, incident reporting, first aid, medical surveillance); GBV/SEA/SH Action Plan (Code of Conduct, training, confidential reporting mechanisms, referral pathways, sanctions); community health and safety plan (Traffic Management Plan – managing heavy truck movement on the Lekki-Epe Expressway, access management, community awareness); GRM (worker and community).
Management systems	Roles and responsibilities (designated dedicated E&S officer for the site, community liaison officer (CLO) fluent in local dialect, OHS officer, GBV focal point (female)); training plan (induction, monthly toolbox talks, specialised training (marine awareness, cultural heritage chance finds, GBV)); monitoring plan (marine water quality, biodiversity (if near protected areas), air, noise, waste, OHS, GRM – methods, frequency, locations, corrective action triggers); reporting plan (weekly reports to PIU, incident reporting (immediate verbal, 24-hour written)); corrective action procedure; record keeping.
Emergency response	EPRP (fire, coastal or flash flood, marine or terrestrial spill, medical emergency, GBV incident, security incident) – site-specific; emergency equipment (fire extinguishers, first aid kit, spill kit, marine boom/sorbents if near water); emergency contacts (including local marine police, community leaders, SAR services); drill schedule.

7.12.2 Contractor ESMP (C-ESMP) Approval Process

Step	Action	Responsible	Timeline

1	Contractor submits C-ESMP to PIU	Contractor	At bid stage (or within 2 weeks of contract award)
2	PIU reviews C-ESMP for completeness and compliance with ESMP (supported by IESM)	PIU	Within 2 weeks of submission
3	PIU requests revisions (if needed)	PIU	Within 2 weeks
4	Contractor submits revised C-ESMP	Contractor	Within 1 week of receiving comments
5	PIU approves C-ESMP (or escalates to AfDB if major gaps)	PIU / AfDB	Within 1 week
6	Contractor mobilises only after C-ESMP approval	Contractor	N/A

7.12.3 Contractor E&S Performance Monitoring

Indicator	**Target**	**Monitoring Method**	**Sanction for Non-Compliance**
C-ESMP approval before mobilization	100%	PIU verification	No mobilisation → project delay
Weekly E&S report submission	100% (on time)	PIU tracking	Warning (first); financial penalty (repeat)
Environmental monitoring (air, noise, marine water) exceedances	≤5% of samples exceed limits (and corrective actions implemented within 48 hours)	PIU / IESM audit	Warning (first); financial penalty (repeat)
OHS lost-time injury rate	≤2 per 200,000 hours	PIU / IESM audit	Safety stand-down; retraining
GBV incidents	Zero tolerance	PIU / IESM audit (GRM records)	Immediate termination of contract (for perpetrator); financial penalty for contractor
Local hiring (unskilled)	≥60% from Ibeju-Lekki LGAs	PIU / IESM audit (hiring records)	Financial penalty (if persistent non-compliance)

GRM grievance resolution	≥95% resolved within 14 days	PIU / IESM audit (GRM records)	PIU escalation; financial penalty (if systemic)
Community satisfaction	≥80% satisfied	Community survey (IESM)	Improvement plan required

7.12.4 Sanctions for Contractor Non-Compliance

Non-Compliance Level	**Example (Ibeju-Lekki Context)**	**Sanction**
Minor (isolated, low impact)	Missed weekly report (late by 1–2 days); PPE non-compliance (1–2 workers); minor dust emission (corrected immediately).	Verbal warning; written warning (if repeated)
Moderate (repeated minor, or single moderate impact)	Repeated missed reports; minor spill (contained, reported); exceedance of noise/dust limit (no corrective action); failure to maintain silt curtain integrity.	Written warning; financial penalty (₦500,000 – ₦2 million per incident)
Major (significant impact, or repeated moderate)	Major spill (impacting lagoon or ocean); significant clearing beyond demarcated area (impacting mangroves); fatality; GBV incident (not prevented, not reported, no survivor support); child labour; forced labour; community protest due to contractor actions.	Financial penalty (₦5 million – ₦20 million per incident); suspension of work (until corrective actions implemented); termination of contract (for gross negligence)
Critical (willful violation, criminal act)	Willful destruction of sensitive habitat (mangroves); asbestos release (willful negligence); sexual violence by contractor employee; bribery/corruption.	Immediate termination of contract; legal prosecution; debarment from future AfDB-funded projects

7.13 Conclusion

The Environmental and Social Management Plan (ESMP) provides a comprehensive, practical, and enforceable framework for managing the environmental and social impacts of the Ibeju-Lekki Axis facilities.

Key elements of the ESMP include:

- Clear institutional responsibilities – PIU (oversight), contractors (implementation), facility operators (operation), IESM (independent monitoring), regulators (FMEnv, LASEPA, NIWA).
- Detailed monitoring plan – Specific to coastal and marine indicators, biodiversity, and social metrics, aligned with NESREA, AfDB, and international limits.
- Robust reporting framework – Daily logs, weekly reports, monthly reports, quarterly audits, annual performance reports, incident reports (24–48 hours).
- Specialised management plans (appendices) covering waste, OHS, traffic (Lekki-Epe corridor), camps, labour influx, GBV, security, chance finds (marine and cultural), biodiversity (coastal/marine), climate (coastal resilience), and more.
- Realistic budget (indicative US$400,000–700,000 for Ibeju-Lekki Axis, reflecting higher logistical and environmental monitoring costs) and resources (PIU E&S staff, contractor E&S officers, IESM, monitoring equipment, training).
- Capacity building – Training for PIU, contractors, facility operators, and community on ESMP, OHS, GBV, marine spill response, IPC, GRM.
- Emergency preparedness – EPRP for fire, coastal flooding, marine spill, spill, medical emergency, GBV, security incident, with emergency equipment, drills, and contact lists.
- ESMP review and update mechanism – Annual review, plus trigger-based reviews (incidents, scope change, regulation change), with AfDB approval for significant changes.
- Contractor ESMS requirements – C-ESMP (contractor-specific, with mandatory coastal annexes), approval process, performance monitoring, sanctions for non-compliance.

With full implementation of this ESMP, the Ibeju-Lekki Axis facilities will comply with AfDB ISS, FMEnv EIA Act, NESREA regulations, LASEPA requirements, and international good practices (IFC, WHO, ILO), while safeguarding communities, workers, and the environment.

CHAPTER EIGHT – DECOMMISSIONING AND ABANDONMENT

8.1 Introduction

This chapter presents the decommissioning and abandonment framework for the four PHC facilities in Group 5 (Epe/Ibeju-Lekki Axis). Decommissioning is not anticipated for at least 50 years (the design life of the new and refurbished facilities). However, a framework is required under AfDB ISS OS (Environmental Assessment) to ensure that when decommissioning eventually occurs, it is planned, environmentally sound, and socially responsible.

This chapter also addresses unplanned abandonment – premature closure due to catastrophic events or change in healthcare delivery – which requires emergency response within 30 to 90 days.

The decommissioning and abandonment framework applies to:

- Agbowa PHC (new construction)
- Ejirin PHC (refurbished facility)
- Solu-Alade PHC (refurbished facility)
- Orimedu PHC (new construction)

Decommissioning of approximately 500 to 1,200 tonnes of structural materials across the four PHC facilities in the Epe/Ibeju-Lekki Axis requires a waste management plan aligned with the National Environmental (Sanitation and Wastes Control) Regulations, 2009 and the Hazardous Waste (Special Criminal Provisions) Act Cap H1 LFN 2004. Unplanned abandonment scenarios triggered by coastal erosion, storm damage, or structural failure would require accelerated response within 30 to 90 days for Orimedu and Ejirin PHCs.

Table 8.1: Decommissioning and Abandonment Scenarios – Group 5

Scenario	Definition	Timeframe	Triggers
Planned decommissioning	End-of-life closure after normal operational lifespan (50+ years)	Planned over 6 to 12 months	Facility reaches end of structural life; new facility built elsewhere
Unplanned abandonment	Premature closure due to catastrophic	Emergency response	Coastal erosion undermining foundation

Scenario	Definition	Timeframe	Triggers
	events or change in healthcare delivery	within 30 to 90 days	(Orimedu); storm surge damage (Orimedu, Ejirin); fire; structural failure; government directive

Source: Multiple Development Services (2026)

Table 8.2: Regulatory Basis

Regulation or Standard	Key Requirement
FMEnv EIA Act CAP E12 LFN 2004	Decommissioning plan as part of approved ESIA
NESREA (Sanitation and Wastes Control) Regulations, 2009	Waste segregation, collection, transportation, disposal
NESREA (Air Quality Control) Regulations, 2021	Dust and emissions during demolition
NESREA (Noise Standards and Control) Regulations, 2009	Noise limits during demolition
LASEPA Environmental Management and Protection Law, 2017	Permits for demolition, waste disposal, closure
Hazardous Waste Act Cap H1 LFN 2004	Asbestos and hazardous waste disposal
AfDB ISS OS (Environmental Assessment)	Decommissioning plan required

Source: Multiple Development Services (2026)

8.2 Decommissioning And Abandonment Principles

The following principles apply to both planned decommissioning and unplanned abandonment.

Table 8.3: Decommissioning and Abandonment Principles – Group 5

Principle	Description
Hierarchy first	Avoid residual impacts → minimise through engineering → restore site → offset any residual damage
Safety priority	Worker and community health and safety paramount during demolition
Hazardous material control	Licensed abatement of asbestos (if confirmed at Solu-Alade) and safe disposal of chemicals, pharmaceuticals, and mercury
Waste minimisation and recycling	Target ≥70 percent diversion of inert waste (concrete, bricks, metal) from landfill
Site restoration	Return land to original state (or better) with native revegetation (see Chapter 4, Section 4.5.2)
Community engagement	Advance notification (90 days for planned; immediate for abandonment) and GRM continuity
Regulatory closure	Final environmental sampling and closure certificate from LASEPA

Source: Multiple Development Services (2026)

8.3 Planned Decommissioning (End-Of-Life)

8.3.1 Decommissioning Activities (Sequential)

The following activities shall be undertaken in order. The timeline assumes 12 months for a typical PHC facility.

Phase 1 – Pre-decommissioning (Month 1 to 3)

Table 8.4: Pre-decommissioning Activities – Group 5

Activity	Description	Responsible
Structural survey	Assess building integrity; identify hazardous materials (asbestos, mercury, chemicals)	Facility Operator / Licensed consultant
Waste quantification	Estimate volumes of concrete, metal, wood, hazardous waste	Contractor
Community notification	Minimum 90 days advance notice to host communities; public meeting	PIU / Facility Operator

Healthcare service transition	Transfer clinical services to alternative PHC or temporary facility; safe transfer of patients, medical records, and cold-chain medicines	LSMoH / PHCB
Permitting	Obtain demolition permit from LASEPA; waste disposal authorisations	PIU / Contractor

Source: Multiple Development Services (2026)

Phase 2 – Hazardous material removal (Month 2 to 4)

Table 8.5: Hazardous Material Removal – Group 5

Activity	Description	Responsible
Asbestos abatement (if present – Solu-Alade)	Licensed contractor; wet removal; double-bagging (200-micron polyethylene); labelled transport; hazardous waste landfill	Licensed abatement contractor
Mercury removal	Remove dental amalgam, thermometers, fluorescent tubes; recycle through licensed mercury recycler	Licensed hazardous waste contractor
Chemical waste disposal	Disinfectants, laboratory reagents, expired pharmaceuticals – high-temperature incineration	Licensed hazardous waste contractor
Medical equipment decontamination	Autoclave or chemical sterilisation before salvage or disposal	Facility operator

Source: Multiple Development Services (2026)

Phase 3 – Salvage and reuse (Month 3 to 4)

Table 8.6: Salvage and Reuse – Group 5

Item	Action	Beneficiary
Solar PV panels	Return to supplier undertake-back agreement (per LSHIP procurement terms)	Supplier (recycling)
Lithium-ion batteries	Return to supplier under battery take-back agreement; recycle cobalt, lithium, nickel	Supplier (recycling)
Medical equipment (functional)	Transfer to another PHC or donate to public health authority	LSMoH / Other PHC

Furniture and fixtures	Donate to community or transfer to other government facility	LGA / Community
Electrical equipment (switchgear, cables)	Salvage for reuse or recycle copper	Licensed scrap dealer

Source: Multiple Development Services (2026)

Phase 4 – Demolition (Month 4 to 8)

Demolition shall follow the reverse order of construction: **MEP → roofing → structural walls → foundation**.

Table 8.7: Demolition Activities – Group 5

Activity	**Method**	**Environmental and Social Control**
MEP removal	Disconnect utilities (water, electricity, sewer) at boundary; lockout/tagout (LOTO)	No residual electrical hazard
Roofing removal	Manual dismantling of aluminium-zinc sheets; avoid dropping	Dust suppression (water spraying); no asbestos release (if confirmed)
Structural wall demolition	Mechanical (excavator with breaker) for non-load-bearing; controlled collapse for load-bearing	Vibration monitoring (PPV <5 mm/s near remaining structures); dust screens; water spraying
Foundation removal	Excavator to remove concrete footings and raft slabs; crush on site	Sediment control (silt fences if rain expected)

Source: Multiple Development Services (2026)

Phase 5 – Waste management (throughout demolition)

Waste shall be segregated at source into the following streams.

Table 8.8: Decommissioning Waste Management – Group 5

Waste Type	**Estimated Quantity (per PHC)**	**Management Method**
Concrete, blocks, bricks, tiles	300 to 800 tonnes	Crush for recycled aggregate; use as fill on approved sites; dispose remainder at licensed inert waste landfill

Reinforcement steel, metal pipes, wiring	10 to 50 tonnes	Recycle through licensed scrap metal dealer
Wood (roofing, formwork, furniture)	5 to 20 tonnes	Reuse (donate to community); recycle (chipboard); dispose at licensed landfill
Roofing sheets (aluminium-zinc)	2 to 10 tonnes	Recycle (aluminium smelter)
Solar PV panels	30 to 50 panels	Return to supplier take-back
Lithium-ion batteries	10 to 15 batteries	Return to supplier take-back
Asbestos (if present at Solu-Alade)	10 to 100 tonnes	Licensed hazardous waste landfill
Chemical waste	100 to 500 litres	Licensed hazardous waste contractor – incineration
Pharmaceutical waste	50 to 200 kg	Return to manufacturer or high-temperature incineration
General waste	1 to 5 tonnes	LAWMA collection; sanitary landfill

Source: Multiple Development Services (2026)

Phase 6 – Site restoration (Month 8 to 10)

Table 8.9: Site Restoration Activities – Group 5

Restoration Activity	**Specification**	**Success Indicator**
Foundation removal	All concrete foundations, slabs, and footings removed to 0.5 metres below grade	Visual inspection; no remaining structural debris
Backfilling	Clean, inert fill (imported from licensed source or recycled from demolition)	No contamination (laboratory testing if imported fill used)
Grading	Smooth, stable surface with drainage directed away from former building footprint	No ponding after heavy rain
Topsoil replacement	Minimum 150 millimetres of clean topsoil (organic matter ≥2 percent)	Topsoil depth verified

Revegetation	Native grasses and shrubs (see Chapter 4, Section 4.5.2); planting density 2 plants per square metre	Survival rate ≥80 percent after 1 year
Drainage restoration	Restoration of any altered drainage channels; removal of temporary culverts	No blockages; water flows along original paths

Source: Multiple Development Services (2026)

Phase 7 – Final environmental sampling and closure (Month 10 to 11)

Table 8.10: Final Environmental Sampling and Closure – Group 5

Activity	Standard	Responsible
Soil sampling (grid pattern, 5 points per former footprint)	Compare to NESREA soil quality standards for heavy metals, TPH, PAH	Environmental consultant
Groundwater sampling (borehole if present, or nearest community well)	Compare to NESREA drinking water standards	Environmental consultant
Visual inspection	No debris, stable surface, drainage functional	LASEPA / PIU / IESM
Closure certificate	Issued by LASEPA after all conditions met	LASEPA

Source: Multiple Development Services (2026)

Phase 8 – Land handover (Month 11 to 12)

Table 8.11: Land Handover – Group 5

Action	Responsible
Return land to original owner (Lagos State Government or community)	PIU
Provide closure certificate to FMEnv and AfDB	PIU
Archive decommissioning records (minimum 10 years)	PIU / LSMoH

Source: Multiple Development Services (2026)

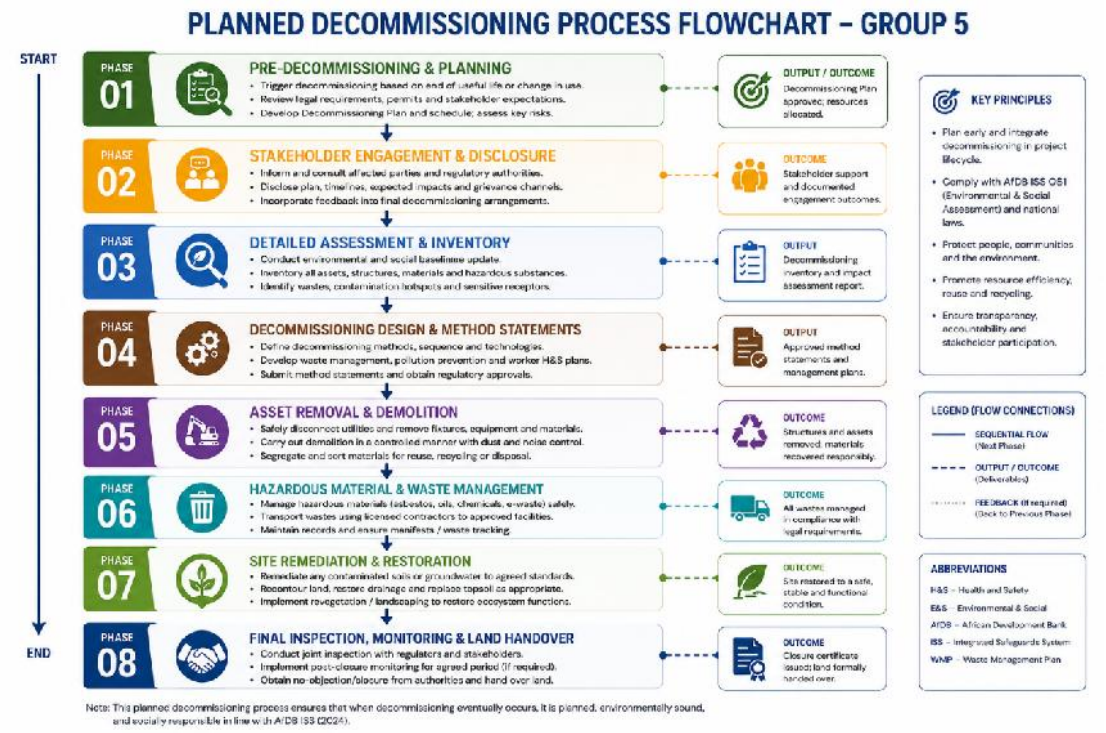


Figure 8.1: Planned Decommissioning Process Flowchart – Group 5

Source: Multiple Development Services (2026)

8.4 Unplanned Abandonment (Premature Closure)

8.4.1 Abandonment Triggers

The following events may trigger unplanned abandonment before a facility reaches its design life.

Table 8.12: Abandonment Triggers – Group 5

Trigger	Likelihood (Group 5)	Response Timeframe
Coastal erosion undermining foundation	Medium to High (Orimedu – high vulnerability)	30 days
Storm surge / extreme flood damage	Medium (Ejirin, Orimedu – high vulnerability)	14 days
Structural failure (e.g., foundation collapse)	Low	Immediate (stop use)
Fire damage	Low	Immediate
Government directive (e.g., change in healthcare delivery model)	Low	As directed

Source: Multiple Development Services (2026)

8.4.2 Abandonment Response Procedures

Step 1 – Immediate safety response (0 to 24 hours)

Table 8.13: Immediate Safety Response – Group 5

Action	Responsible
Evacuate patients, staff, and community members from danger zone	Facility Operator / LSMoH
Secure the facility (fencing, guards, signage)	Contractor / Security
Notify PIU and LGA	Facility Operator
Notify LASEPA (if environmental release – flood, fire, structural collapse)	PIU

Source: Multiple Development Services (2026)

Step 2 – Assessment (24 to 72 hours)

Table 8.14: Damage and Risk Assessment – Group 5

Action	Responsible
Structural engineer assessment (safe to enter? salvageable?)	Licensed engineer
Environmental assessment (flood damage, chemical spills, asbestos release)	Environmental consultant
Healthcare needs assessment (alternative service provision)	LSMoH / PHCB
Abandonment decision (repair vs demolish vs abandon in place)	PIU / AfDB / LSMoH

Source: Multiple Development Services (2026)

Step 3 – Abandonment execution (30 to 90 days)

Table 8.15: Abandonment Execution Options – Group 5

Decision	Action
Repair and reopen	Proceed with emergency repairs (Chapter 7 – ESMP applies)

Decision	Action
Demolish and restore	Follow planned decommissioning procedure (Section 8.3) on accelerated schedule
Abandon in place (only if safe and environmentally acceptable)	Seal entrances; remove hazardous materials; fence perimeter; monitor annually

Source: Multiple Development Services (2026)

Abandonment in place is disfavoured unless all the following conditions are met:

- No risk of collapse affecting adjacent properties or public access
- No hazardous materials (asbestos, chemicals) remaining on site
- No risk of groundwater contamination
- Landowner agreement
- LASEPA written approval

8.4.3 Abandonment Funding

Table 8.16: Abandonment Funding Sources – Group 5

Scenario	Funding Source
Premature abandonment due to force majeure (flood, storm, coastal erosion)	Government contingency fund / insurance (if procured)
Premature abandonment due to structural failure (contractor negligence)	Contractor / insurance bond
Premature abandonment due to operational failure (e.g., no staff, no funding)	LSMoH operational budget

Source: Multiple Development Services (2026)

Recommendation: The LSMoH shall maintain a decommissioning and abandonment sinking fund – an annual allocation of 0.5 percent of facility replacement value (approximately USD 2,500 to 5,000 per PHC per year) to cover future closure costs.

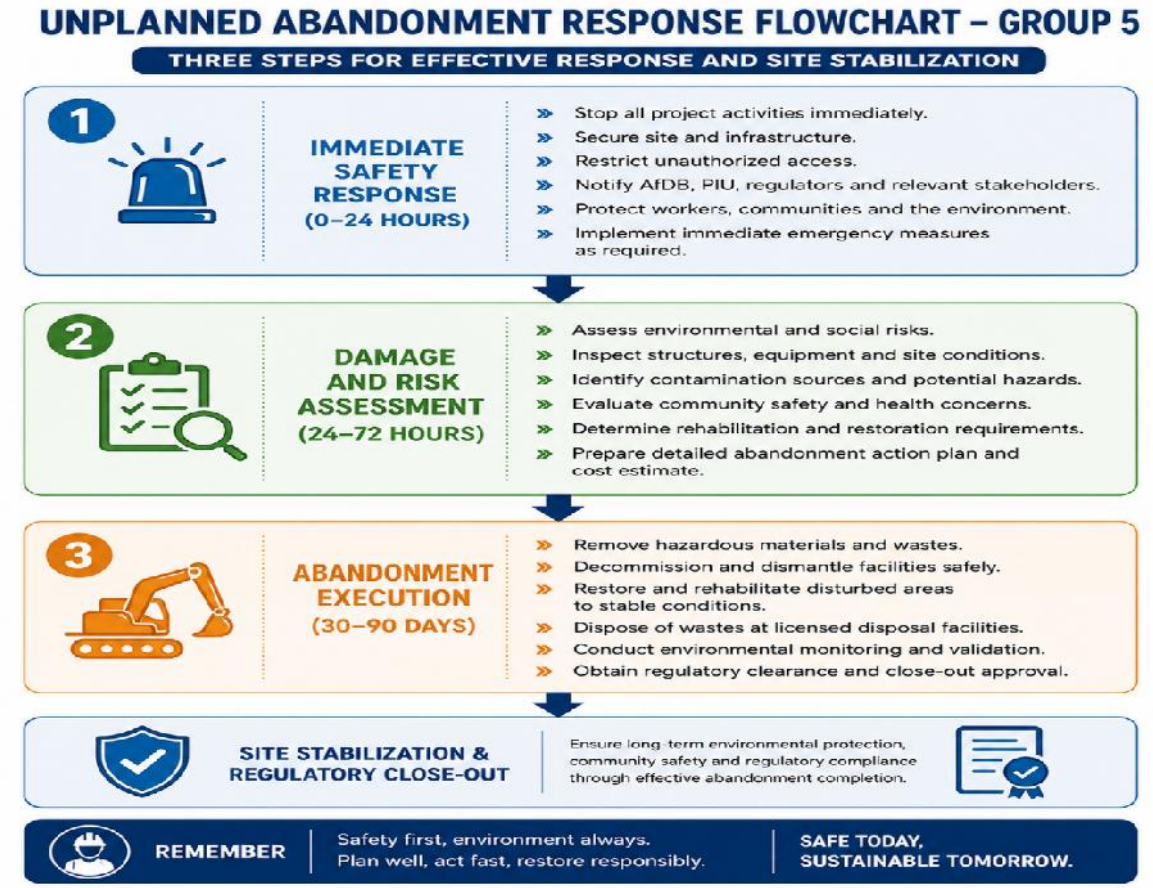


Figure 8.2: Unplanned Abandonment Response Flowchart – Group 5

Source: Multiple Development Services (2026)

8.5 Climate and Environmental Considerations During Decommissioning

Table 8.17: Climate and Environmental Mitigation during Decommissioning – Group 5

Impact	**Mitigation Measure**	**Mitigation Hierarchy**
Dust from demolition	Water spraying (continuous during active demolition); dust screens	Minimise
Noise from demolition	Restrict hours (07:00 to 18:00); temporary noise barriers near residential areas	Minimise
Vibration from heavy equipment	Monitor peak particle velocity (PPV); adjust methods if PPV >5 mm/s near remaining structures	Minimise

Impact	Mitigation Measure	Mitigation Hierarchy
Stormwater runoff from exposed soils	Install temporary sediment traps and silt fences before demolition begins	Minimise
GHG emissions from equipment	Use fuel-efficient equipment; turn off engines when not in use; use low-sulphur diesel	Minimise
Asbestos fibre release (if present at Solu-Alade)	Licensed abatement; wet removal; air monitoring (PCM); evacuation zone during removal	Avoid / Minimise

Source: Multiple Development Services (2026)

Causal chain example (asbestos release during unplanned abandonment – Solu-Alade): *Technical:* Storm damage to Solu-Alade PHC causes partial roof collapse, releasing asbestos fibres from damaged ceiling panels before abatement can be conducted. *Environmental and Social:* Airborne fibres expose workers and nearby community (within 100 metres) to mesothelioma risk over 20 to 40 years latency. *Financial:* Estimated unmitigated liability of USD 5 million to 10 million for health monitoring, compensation claims, litigation, and reputational damage to LSMoH and AfDB.

8.6 Community and Stakeholder Engagement During Decommissioning Or Abandonment

Table 8.18: Community Engagement during Decommissioning or Abandonment – Group 5

Activity	Timing	Responsible
Advance notification of planned decommissioning (minimum 90 days)	Pre-decommissioning	PIU / Facility Operator
Community meeting to explain schedule, noise, dust, access restrictions	Pre-decommissioning	PIU / Contractor
Immediate notification for unplanned abandonment (within 24 hours)	Upon trigger	Facility Operator / PIU
Ongoing grievance mechanism (existing GRM remains active – see Chapter 7, Section 7.12)	Throughout	PIU

Access management (temporary walkways, alternative routes if needed)	During demolition	Contractor
Community liaison officer (designated)	Throughout	Contractor / PIU

Source: Multiple Development Services (2026)

8.7 Health and Safety During Decommissioning Or Abandonment

The **OHS Plan** and **Emergency Preparedness and Response Plan (EPRP)** apply to the decommissioning and abandonment phases.

Table 8.19: Health and Safety Measures during Decommissioning or Abandonment – Group 5

Hazard	Mitigation
Falls from height	Guardrails on remaining structures; safety harnesses with anchor points; scaffolding inspection
Structural collapse	Sequential demolition; engineer sign-off before each phase; exclusion zones
Asbestos exposure (if confirmed at Solu-Alade)	Licensed abatement contractor; PPE (Type 5 coverall, P3 respirator); air monitoring; medical surveillance
Silica dust (concrete crushing)	Wet methods; respirators (N95 or higher); dust suppression
Heavy machinery accidents	Operator training; exclusion zones; daily pre-use inspection; spotter for reversing vehicles
Electrical hazards	Lockout/tagout (LOTO) before demolition; licensed electrician to isolate supply
Heat stress (coastal humid conditions)	Shade, water breaks, rest periods, acclimatisation (same as construction phase – Chapter 7, Section 7.3.4)
Flood or storm during abandonment (unplanned)	Weather monitoring; evacuation plan; no work during active storm events

Source: Multiple Development Services (2026)

8.8 Decommissioning and Abandonment Budget (Indicative)

Decommissioning cost is not included in the current ESMP budget (Chapter 7) as it is not anticipated for 50 years or more. However, a provision shall be made by the facility owner (Lagos State Ministry of Health) at the time of decommissioning.

Table 8.20: Decommissioning and Abandonment Budget (Indicative) – Group 5 (per PHC)

Scenario	Estimated Cost (USD per PHC)	Notes
Planned decommissioning (excluding asbestos)	100,000	Based on 2026 prices
Planned decommissioning (with asbestos – Solu-Alade)	250,000	Asbestos abatement is the major cost driver
Unplanned abandonment (partial demolition and stabilisation)	60,000	Does not include full site restoration
Unplanned abandonment (complete demolition and restoration)	150,000	Accelerated schedule increases cost

Source: Multiple Development Services (2026)

Recommended sinking fund contribution: USD 2,500 to 5,000 per PHC per year (0.5 percent of replacement value), accumulated over the facility's life.

8.9 Record Keeping and Reporting

Table 8.21: Decommissioning Record Keeping – Group 5

Record	Retention Period	Responsible
Decommissioning plan (approved version)	Permanent	PIU / AfDB
Asbestos abatement records (air monitoring, waste manifests, medical surveillance)	40 years (liability period)	PIU / Licensed abatement contractor
Waste manifests (hazardous and inert)	10 years	Contractor / Facility operator
Final environmental sampling results	Permanent	PIU / LASEPA
Closure certificate	Permanent	PIU / LASEPA / FMEnv / AfDB
Land handover documentation	Permanent	PIU / Lagos State Government

Source: Multiple Development Services (2026)

8.10 Regulatory Compliance Summary

Table 8.22: Regulatory Compliance Summary – Decommissioning and Abandonment – Group 5

Regulation or Standard	Key Requirement	Compliance Action

FMEnv EIA Act CAP E12 LFN 2004	Decommissioning plan as part of approved ESIA	This chapter fulfills requirement
NESREA (Sanitation and Wastes Control) Regulations, 2009	Waste segregation, collection, transportation, disposal	Section 8.3.5
NESREA (Air Quality Control) Regulations, 2021	Dust and emissions during demolition	Section 8.5
NESREA (Noise Standards and Control) Regulations, 2009	Noise limits during demolition	Section 8.5
LASEPA Environmental Management and Protection Law, 2017	Permits for demolition, waste disposal, closure	Section 8.3.1
Hazardous Waste Act Cap H1 LFN 2004	Asbestos and hazardous waste disposal	Section 8.3.2
AfDB ISS OS (Environmental Assessment)	Decommissioning plan required	This chapter

Source: Multiple Development Services (2026)

8.11 Conclusion

The decommissioning and abandonment framework for the Epe/Ibeju-Lekki Axis PHC facilities (Group 5) ensures that when the facilities reach end-of-life (or in the rare event of premature abandonment), all activities will be conducted in an environmentally sound, socially responsible, and legally compliant manner.

Key elements of this framework:

- Two scenarios addressed: planned decommissioning (50 years or more) and unplanned abandonment (30 to 90 days response)
- Sequential, phased approach with clear responsibilities and timelines
- Waste management with recycling targets (≥70 percent diversion for inert waste)
- Strict hazardous material management (asbestos abatement where confirmed at Solu-Alade, mercury recovery, chemical and pharmaceutical waste disposal through licensed contractors)
- Site restoration to natural state with native revegetation (see Chapter 4, Section 4.5.2)
- Community notification and GRM continuity (advance notice for planned closure; immediate notification for abandonment)
- Worker OHS protection (same standards as construction phase – Chapter 7)

- Regulatory closure certification from LASEPA and FMEnv
- Sinking fund recommendation (0.5 percent of replacement value per year) to ensure funds are available when needed

This framework shall be reviewed and updated within 5 years of any anticipated decommissioning event and shall be shared with the Independent Environmental and Social Monitor (IESM) during any closure audit.

CHAPTER 9 – SITE-SPECIFIC GBV/SEA/SH ACTION PLAN

9.1 Introduction

This GBV/SEA/SH Action Plan applies to the four PHC facilities assessed in this ESIA across the Ibeju-Lekki Axis Group 5:

- **Agbowa PHC** (new construction footprint, expanding local population demands, heavy material transit, coastal vulnerability)
- **Ejirin PHC** (historic coastal/riverine setting, aged roofing structures, high aquatic ecosystem sensitivity)
- **Solu-Alade PHC** (growing rural community setting, seasonal water table fluctuations requiring robust sub-drainage engineering)
- **Orimedu PHC** (direct exposure to high coastal vulnerability, sandy terrain, and sea-level rise dynamics along the Ibeju-Lekki corridor)

Per the Group 5 report's risk assessment, Agbowa and Orimedu carry a Medium-High GBV/SEA/SH risk rating; Ejirin and Solu-Alade carry a Medium rating. All four sites show unmitigated risk factors including labour influx, poor lighting, lack of confidential reporting, economic vulnerability, flood risk, police-response gaps, and cultural norms; Ejirin and Solu-Alade additionally reflect their riverine and coastal-community contexts.

9.2 Legal and Policy Framework

Nigerian laws: VAPP Act (2015), Labour Act (2004), Child Rights Act (2003), Criminal Code (2004), Lagos State Domestic Violence Law (2007). International standards: AfDB OS5, IFC Good Practice Note on GBV/SEA/SH (2020), ILO Conventions 155 & 190, WHO/ILO Health Worker Safety Guidance (2020), UN Guiding Principles on Business & Human Rights, WHO Clinical Management of Rape Guidelines (2024).

9.3 GBV/SEA/SH Risk Assessment

Table 9.5 – GBV Risk Factors Identified in the Agbowa, Ejirin, Solu-Alade, and Orimedu PHCs

PHC	Risk Factors (all Unmitigated)	Risk Level
Agbowa	Labour influx; poor lighting; lack of confidential reporting; economic vulnerability; new construction foundation works; flood risk; police response; cultural norms	Medium-High

Ejirin	Labour influx; riverine communities; poor lighting; lack of confidential reporting; economic vulnerability; asbestos abatement; police response	Medium
Solu-Alade	Labour influx; poor lighting; lack of confidential reporting; economic vulnerability; high water table mitigation; police response; cultural norms	Medium
Orimedu	Labour influx; coastal corridor mobility; poor lighting; lack of confidential reporting; economic vulnerability; elevated platform construction; police response	Medium-High

High-Risk Scenarios: worker-community SEA (exchange of money/goods for sex); worker-worker SH (quid pro quo harassment); GBV against vulnerable groups (girls, women with disabilities); child sexual abuse (zero tolerance); survivor reports but receives no response; community protest due to unaddressed GBV incidents; workforce mobility along the developing Ibeju-Lekki corridor complicating recruitment screening and survivor access to cross-jurisdiction services.

9.4 Prevention Measures

- **9.4.1 Code of Conduct (CoC):** All workers, subcontractors, and security personnel at Agbowa, Ejirin, Solu-Alade, and Orimedu must sign a GBV/SEA/SH Code of Conduct prohibiting sexual harassment, exploitation or abuse, sexual activity with minors, intimidation or retaliation, alcohol/drug use on site, and relationships with community members where a power imbalance exists. Translated into Yoruba and Pidgin; displayed at all sites; re-signed every 6 months.
- **9.4.2 Mandatory Training:** Workers (induction, monthly toolbox talks, supervisor-specific training, GRM focal-point training); community (quarterly awareness sessions, women's-group engagement, youth sessions, traditional/religious leader sensitisation with attention to mobile workforce populations along the Ibeju-Lekki corridor); facility operators (recognising survivors, confidential medical management, referral pathways).
- **9.4.3 Safe Recruitment Practices:** No hiring of minors; background checks for security personnel, including verification appropriate to the developing Ibeju-Lekki corridor worker pool; gender-balanced hiring (target >=20% female); written contracts including CoC and GRM information.
- **9.4.4 Community-Level Prevention:** Quarterly awareness campaigns; women's safe spaces at all four PHCs; improved (solar) lighting – a risk factor common to all four

sites; participatory safety audits with women and girls; engagement with fisher, trader, and coastal community associations (Ejirin, Orimedu).

9.5 Response Measures

- **9.5.1 Survivor-Centred Approach:** Confidentiality, safety, respect, non-discrimination, no retaliation, informed consent, right to refuse services.
- **9.5.2 Reporting Channels:** Hotline (SMS/WhatsApp) with a female GBV focal point; locked suggestion boxes; female GRM focal points; community liaison officers; supervisor reporting; anonymous online GRM portal – designed specifically to overcome the "lack of confidential reporting" risk factor common to all four sites and the additional corridor-accessibility barriers.
- **9.5.3 Referral Pathways (Structured Pathway):**

Step	Service Area	Service Providers	Safeguard
1	Entry Point	Health workers, police, NGOs, community leaders	MoU to maintain confidentiality and believe the survivor
2	Safety and Support	Any trained personnel	MoU to prioritise safety
3	Health Services	Hospitals, clinics	MoU to obtain informed consent
4	Psychosocial Support	Counsellor, NGO	MoU to respect survivor's pace, ensure privacy
5	Justice Services	Case managers, GBV focal personnel	MoU to avoid coercion; legal advice
6	Protection Services	Social welfare, NGOs	Ensure protection safety planning
7	Referral Coordination	Case managers, GBV focal person	Ensure smooth, confidential handover
8	Case Management	Case manager, social worker	Ongoing follow-up

Referral agreements (MoUs) with named service providers will be finalised and in place before construction begins at any of the four sites, with particular attention to arrangements accessible to mobile communities along the Ibeju-Lekki corridor.

9.6 Sanctions for Violations

Verbal warning -> written warning -> suspension -> termination -> legal prosecution (rape, sexual activity with a minor, assault). Applies equally to workers, subcontractors, and security personnel at all four sites.

9.7 Monitoring & Evaluation

Indicator	Target	Frequency
Workers trained	100%	Monthly
Community members reached	≥ 60%	Quarterly
GBV incidents reported	Tracked	Monthly
Cases resolved <=14 days	≥ 90%	Monthly
Survivor satisfaction	≥ 80%	Quarterly
CoC compliance	100%	Monthly

Reporting: Contractor -> PIU monthly; PIU -> AfDB quarterly; IESM -> AfDB quarterly audits.

9.8 Roles & Responsibilities

- **PIU:** Oversight, reporting, GRM management, coordination with service providers
- **Contractor:** CoC enforcement, training, reporting, sanctions
- **GBV Specialist:** Training, case management, referral coordination
- **Facility Operator:** Survivor medical management, confidentiality
- **IESM:** Independent verification
- **Community Leaders:** Awareness, safe spaces, referrals

9.9 GBV/SEA/SH Summary Matrix

Colour Codes: ● Critical | □ Major | □ Moderate | □ Minor | ⛃ Positive

Risk Category	Site(s)	Unmitigated Risk	Mitigation / Action	Significance	Responsible
Worker-Community SEA	All sites (highest along developing corridor)	Workers offering money/goods/jobs for sex	CoC (zero tolerance); induction + monthly training; confidential reporting; sanctions	● Critical	Contractor / PIU / GBV Specialist

Worker-Worker SH	All sites	Quid pro quo harassment	Supervisor training; CoC enforcement	□ Major	Contractor / PIU
Child Sexual Abuse (<18 yrs)	All sites	Sexual activity with minors	CoC prohibition; background checks; community awareness	● Critical	Contractor / PIU / GBV Specialist
GBV Against Vulnerable Groups	All sites (poor lighting a common factor)	Women/girls on isolated paths	Solar lighting; safe spaces; community awareness	□ Major	PIU / Contractor / LGA
Lack of Confidential Reporting	All sites; compounded by regional mobility	Survivors fear retaliation	Hotline; suggestion boxes; anonymous reporting	● Critical	PIU / GBV Specialist
Economic Exploitation	Ejirin (fishers/traders); Orimedu (traders)	Vulnerability to SEA	Women's-group engagement; livelihood support	□ Major	PIU / GBV Specialist
Cultural Norms Supporting GBV	All sites	Acceptance of violence; silence around GBV	Community sensitisation; leader engagement	□ Major	PIU / GBV Specialist
Poor Police Response	All sites	Survivors discouraged from reporting	Referral pathway MOUs; legal aid	□ Major	PIU / GBV Specialist
Flood-Related	Agbowa, Orimedu	Flooding heightens vulnerability	Flood-resilient design;	□ Major	PIU / Contractor

Displacement Risk			contingency planning		
Survivor Reports but No Action	All sites	GRM fails to respond -> re-traumatisation	48-hr acknowledgement; 14-day resolution; monitoring	● Critical	PIU / Contractor

9.10 Budget Estimate

GBV/SEA/SH Action Plan costs for the four sites (training, GBV Specialist consultant, awareness materials, GRM setup, referral-pathway MOUs) are included within the axis's US$466,363 costed ESMP (Section 7.10).

9.11 Stakeholder Engagement, Consultation & GRM

9.11.1 Stakeholder Engagement Process

9.11.1.1 Consultation Activities

Consultations were conducted 24–27 February 2026 across Agbowa, Ejirin, Solu-Alade, and Orimedu. The engagement process followed a structured, inclusive methodology designed to capture diverse community perspectives and ensure free, prior, and informed consultation in accordance with AfDB OS10 requirements.

Below is an overview of the key community engagement and assessment activities conducted across all project sites, highlighting the purpose and coverage of each intervention:

Activity	**Description**	**Sites Covered**
1. Community Entry Meetings	Introductory meetings with traditional leaders (Baales, Chiefs) and community representatives to explain project scope, seek acceptance, and establish engagement protocols	All sites
2. Focus Group Discussions (FGDs)	Gender-segregated and stakeholder-specific discussions with women, youth, fishers, traders, and vulnerable groups	All sites
3. Key Informant Interviews (KIIs)	In-depth interviews with traditional leaders, PHC staff, LGA officials, and community-based organisation leaders	All sites

4. Site Walkthroughs	Environmental and social assessment walkthroughs of each facility with community members	All sites
5. GBV/SEA/SH Screening	Risk identification and reporting-channel assessment using participatory safety audits with women and girls	All sites

All consultations were conducted in Yoruba, Pidgin English, and English to ensure accessibility and inclusivity. Over 16 key community stakeholders were directly engaged, with broader community participation through town hall meetings.

9.11.1.2 Stakeholder Mapping

Stakeholders were systematically mapped using a tiered approach to ensure all affected and interested parties were identified and engaged. The mapping process considered:

- **Impact Level:** Directly affected (host communities) vs. indirectly affected (wider catchment, service providers)
- **Influence:** Decision-makers (LGA, LSMoH) vs. community influencers (traditional leaders, women's groups)
- **Vulnerability:** Vulnerable groups requiring targeted engagement (women, youth, elderly, persons with disabilities, migrants/mobile workforce along the corridor)

Stakeholder Category	Agbowa	Ejirin	Solu-Alade	Orimedu	Engagement Method
Primary Stakeholders	Traders, transport operators, migrant workers	Farmers, residents near asbestos-suspected structures	Coastal fishers, boat operators, fish smokers	Coastal traders, transport operators, fishing communities	FGDs, KIIs, site walkthroughs
Traditional Leaders	Baale/Chief, community elders	Baale, community elders	Baale, community elders	Baale, community elders	Community entry meetings, KIIs
Vulnerable Groups	Women, youth, elderly,	Women, youth, elderly	Women, youth, elderly, fisher households	Women, youth, elderly, fisher households	Gender-segregated FGDs

	persons with disabilities				
Secondary Stakeholders	Ibeju-Lekki LGA / LCDA officials, LSMoH, LASEPA, LAWMA, NESREA, FMEnv, WAPA	Same as Agbowa	Same as Agbowa	Same as Agbowa	Regulatory meetings, workshops
GBV Service Providers	DSVA/DVSRT, Mirabel Centre	DSVA/DVSRT, Mirabel Centre	DSVA/DVSRT, Mirabel Centre	DSVA/DVSRT, Mirabel Centre	Referral pathway MOUs

Stakeholder Mapping Summary:

- **Primary Stakeholders (Directly Affected):** Host communities including informal traders, fishers, farmers, and transport operators whose livelihoods or access may be temporarily affected during construction.
- **Traditional and Community Leaders:** Baales, Chiefs, religious leaders, and CDA chairpersons who influence community acceptance and facilitate grievance resolution.
- **Vulnerable Groups:** Women, youth, elderly, persons with disabilities, and mobile workers who require targeted engagement and specific safeguards.
- **Secondary Stakeholders:** Regulatory agencies (LASEPA, LAWMA, NESREA, FMEnv), implementing agencies (LSMoH, PIU), health sector partners (WAPA, PHCB), and GBV service providers.
- **Financiers and Oversight:** AfDB (financier) and IESM (independent monitoring).

9.11.1.3 Key Concerns Raised and Project Responses

Concern Raised	Stakeholder Group	Project Response	ESIA Reference
Flooding, drainage, and access to safe drinking water	Community leaders, all sites	Elevated platform / surge-resilient design at Orimedu & Agbowa; oversized drainage (1:100-year + 30%); elevated electricals	Chapter 3, Chapter 6

Protection of fishing and trading livelihoods	Fishers, traders, Ejirin, Orimedu	Creek/coastal protections, access maintenance, livelihood safeguards, LRP provisions	Section 4.8.10, Chapter 6
Employment for locals	Youth groups, all sites	≥ 50% local hiring target; local procurement preference	Section 3.11
Safe handling of asbestos and medical waste	PHC staff, Ejirin, Solu-Alade	Licensed abatement with air monitoring; non-burn HMWMP with LAWMA disposal	Chapter 8
Security and lighting	Women's groups, all sites	Solar lighting, perimeter fencing, security coordination	Chapter 9
Confidential GBV reporting	Women's groups, all sites	Survivor-centred confidential channels; female focal points; anonymous options	Chapter 9
Dust and noise during construction	Residents, all sites	Dust suppression (water spraying, covered stockpiles); noise barriers, restricted hours	Chapter 6

9.11.2 Grievance Redress Mechanism (GRM)

9.11.2.1 GRM Process Overview

The Grievance Redress Mechanism (GRM) is designed to provide an accessible, transparent, and timely process for receiving, processing, and resolving project-related complaints. The GRM is operational throughout the project lifecycle (pre-construction, construction, and operation) and is available to all project-affected persons, including community members, workers, and vulnerable groups.

9.11.2.2 GRM Entry Points

Channel	Description	Accessibility
Toll-Free Hotline	Dedicated phone number for verbal complaints	Available 24/7; accessible to illiterate persons
Suggestion Boxes	Locked boxes located at each PHC, community hall, and market	Anonymous; accessible to all
Female GRM Focal Points	Designated female staff to receive GBV/SEA/SH complaints	Confidential; survivor-centred
Community Liaison Officers (CLOs)	Site-based officers who receive complaints directly	Daily presence at sites

Anonymous Reporting	Online portal and written submissions	Confidential; protects complainants
Supervisor Reporting	Workers can report grievances directly to supervisors	Worker-friendly

9.11.2.3 GRM Process Timeline and Responsibilities

Step	Action	Timeline	Responsible	Outcome
1. Receipt & Logging	Complaint received via any entry point; logged into central GRM register with unique ID	Day 1	CLO / GRM Focal Point	Complaint documented and tracked
2. Acknowledgment	Complainant formally acknowledged via SMS, phone call, or written note	Within 48 hours	GRM Focal Point	Complainant informed of process
3. Screening & Categorisation	Complaint screened for urgency, sensitivity (GBV cases prioritised and handled confidentially), and complexity	Days 2–3	PIU GRM Focal Point / GBV Specialist	Complaint categorised (low, medium, high)
4. Investigation	PIU and Contractor investigate; site visits and stakeholder interviews conducted	Days 3–10	Contractor / PIU / CLO	Facts established
5. Resolution & Feedback	Proposed resolution communicated to complainant; if accepted, mitigation action implemented	Within 14 days	PIU / Contractor	Case closed; complainant satisfied
6. Appeal	If unresolved, complainant appeals to	Days 15–21	LGA Liaison Committee	Case escalated

	LGA Liaison Committee			
7. Final Appeal	If still unresolved, escalated to LSMoH / AfDB Independent Recourse Mechanism	Beyond 21 days	LSMoH / AfDB	Final determination

9.11.2.4 GRM Tiered System

Tier	Level	Responsible	Function
Tier 1	PHC / Community Level	CLOs, GRM Focal Points, Traditional Leaders	Receipt, acknowledgment, initial resolution (Level 1 grievances)
Tier 2	LGA Liaison Level	Ibeju-Lekki LGA Environmental Health Officer	Escalation and mediation (unresolved Tier 1 grievances)
Tier 3	PIU Level	PIU GRM Focal Point / Safeguards Team	Investigation, resolution, escalation to regulators
Tier 4	Regulatory / Financier Level	FMEnv, LASEPA, AfDB	Final appeal and independent recourse

9.11.2.5 GBV/SEA/SH Complaint Handling

- **Confidential Handling:** GBV cases are handled with strict confidentiality; only essential personnel are involved.
- **Survivor-Centred Approach:** Confidentiality, safety, respect, no retaliation, informed consent, right to refuse services.
- **Female Focal Points:** Dedicated female GRM focal points available at all sites.
- **Anonymous Reporting:** Anonymous options available to protect survivors from retaliation.
- **Referral Pathways:** Medical (PEP within 72 hours), psychosocial, legal, and protection services via MOUs.
- **Timely Response:** Acknowledgement within 48 hours; resolution within 14 days.

9.11.2.6 GRM Reporting and Monitoring

Report	Frequency	From – To	Content

GRM Monthly Summary	Monthly	Contractor / CLO → PIU	Number of complaints received, resolved, pending; types of complaints; resolution times
GRM Quarterly Report	Quarterly	PIU → AfDB	GRM performance; trends; corrective actions; GBV case summary (anonymised)
GRM Annual Review	Annually	PIU	GRM effectiveness; recommendations for improvement

9.11.3 GRM Cost Estimate

Cost Item	Description	Estimated Cost (US$)
Hotline Setup & Maintenance	Toll-free line; monthly operational costs	1,500
Suggestion Boxes	Supply, installation, and regular collection	500
GRM Focal Point Stipends	Stipends for female GRM focal points and CLOs	2,000
Registers & Documentation	GRM registers, forms, and reporting templates	500
Training	GRM training for CLOs, focal points, and PIU staff	500
TOTAL		5,000

The GRM operational cost over the construction lifecycle is budgeted at $5,000 USD, which is included in the overall ESMP budget (Section 7.10).

9.12 Conclusion

The GBV/SEA/SH Action Plan provides a comprehensive, survivor-centred framework tailored to Agbowa, Ejirin, Solu-Alade, and Orimedu, addressing the axis's documented Medium to Medium-High risk levels through strong prevention, confidential reporting, trained personnel, and the structured eight-step referral pathway established in the report.

The Stakeholder Engagement Plan (SEP) and Grievance Redress Mechanism (GRM) are operational from the pre-construction phase and will remain active throughout construction and operation. The GRM cost of $5,000 USD is included in the overall ESMP budget, ensuring adequate resources for effective complaint processing and community engagement.

CHAPTER TEN – CONCLUSION AND RECOMMENDATIONS

10.1 Introduction

This chapter presents the conclusion and recommendations of the Environmental and Social Impact Assessment (ESIA) for the four PHC facilities in Group 5 (Epe/Ibeju-Lekki Axis). The chapter synthesises the key findings from the baseline assessment (Chapter 4), impact assessment (Chapter 5), mitigation measures (Chapter 6), and the Environmental and Social Management Plan (ESMP) (Chapter 7), and provides recommendations for project implementation, monitoring, and lender approval. Residual impacts after mitigation remain within lender-acceptable thresholds for all receptors except wetland ecosystems at Agbowa, Ejirin, and Solu-Alade and coastal ecosystems at Orimedu, which require enhanced monitoring and biodiversity offset under AfDB OS.

10.2 Summary of Key Findings

10.2.1 Project Description

The Lagos State Health Infrastructure Project (LSHIP) is a US$200 million AfDB-financed programme to modernise healthcare infrastructure across Lagos State. For the Epe/Ibeju-Lekki Axis (Group 5), the project comprises:

Facility	LGA	Project Type	Key Features
Agbowa PHC	Epe	New Construction	Greenfield development; climate-resilient design; improved drainage
Ejirin PHC	Epe	Refurbishment	Riverine setting; structural repairs; WASH upgrades
Solu-Alade PHC	Ibeju-Lekki	Refurbishment	Rural agrarian setting; roofing replacement; suspected asbestos
Orimedu PHC	Ibeju-Lekki	New Construction	Coastal setting; elevated foundation; corrosion-resistant materials

Source: Multiple Development Services (2026)

10.2.2 Baseline Conditions

Table 10.1: Summary of Baseline Findings – Group 5

Site	Environmental Sensitivities	Climate Vulnerability	GBV Risk	RAP Required?
Agbowa PHC	Wetland, poor drainage	Medium (flooding)	Medium	No
Ejirin PHC	Riverine, flood-prone, lagoon influence	High (flooding)	Medium-High	No
Solu-Alade PHC	Seasonal wetlands, poor drainage, suspected asbestos	Medium	Medium-High	No
Orimedu PHC	Coastal, erosion, flooding, saline intrusion	High (coastal erosion, sea-level rise)	Medium-High	No

Source: Multiple Development Services (2026)

Key baseline conclusions:

- Baseline data are dry season only (February 2026). Wet season baseline (April to October) has not been collected. Literature-based projections indicate significantly different conditions: higher rainfall (300 to 400 mm per month), elevated water tables (0 to 1 metre depth), increased flood risk, higher sediment and microbial loads in surface water, and greater ecological activity.
- Four sites are likely Critical Habitat under IFC PS6 due to wetlands (Agbowa, Ejirin, Solu-Alade) and coastal ecosystems (Orimedu). A Critical Habitat Assessment is required before any wetland disturbance.
- No resettlement (RAP) is required for Group 5 – zero PAPs identified.
- GBV risk is medium-high at Ejirin, Solu-Alade, and Orimedu due to poor lighting, isolated paths, labour influx, and weak police response.
- Climate vulnerability is high at Ejirin and Orimedu (flooding, coastal erosion, sea-level rise).

10.2.3 Impact Assessment

Table 10.2: Summary of Key Impacts (Unmitigated) – Group 5

Significance Level	Impact Category	Key Impacts	Key Sites
Critical	Hazardous materials	Asbestos exposure during refurbishment (suspected at Solu-Alade)	Solu-Alade
	GBV/SEA/SH	Under-reporting due to weak local systems	All sites
	Water quality	Coastal and lagoon water quality degradation (linked with Lekki Free Trade Zone, Dangote Refinery)	Orimedu, Ejirin
	Flooding	Wetland, low-lying terrain, intensified rainfall	Agbowa, Ejirin, Solu-Alade
	Climate	Coastal erosion and sea level rise	Orimedu
Major	Water quality	Sediment runoff, fuel and oil spills near wetlands and coastal waters	Ejirin, Orimedu, Agbowa
	Flooding and drainage	Altered drainage patterns, blocked channels	Agbowa, Solu-Alade
	Vegetation and habitat loss	Ecological corridor at Agbowa; farmland and wetland mosaics	Agbowa, Ejirin
	Fauna	Habitat loss and fragmentation	Agbowa

Significance Level	Impact Category	Key Impacts	Key Sites
	OHS	Falls, electrocution, equipment accidents, dust inhalation, heat stress	All construction sites
	Medical waste	Generation of infectious, sharps, pharmaceutical, and chemical waste	All operational facilities
	Climate vulnerability	Flooding inland; coastal risks	Ejirin, Orimedu, Agbowa
Moderate	Air quality	Dust (PM10, PM2.5) during dry season	All sites
	Noise and vibration	Construction equipment noise near residential areas	Agbowa, Solu-Alade
	Soil erosion	Localised erosion in loose or sandy soils	Orimedu, Agbowa
	Wastewater	Contamination of soil and groundwater from septic systems	All PHCs
	Labour and working conditions	Labour influx, OHS issues	All sites
Beneficial	Healthcare access	Improved access to primary healthcare for underserved communities	All operational facilities

Significance Level	Impact Category	Key Impacts	Key Sites
	Maternal and child health	Reduction in maternal and under-five mortality	All facilities
	Employment	Direct and indirect job creation (110 to 135 peak workers for Group 5)	All construction sites
	GHG reduction	Solar PV reduces diesel generator use and emissions	All facilities with solar PV

Source: Multiple Development Services (2026)

10.2.4 Mitigation Measures

The project has adopted the mitigation hierarchy (Avoid → Minimise → Restore → Offset) across all impact categories.

Table 10.3: Key Mitigation Measures by Category – Group 5

Category	Key Mitigation Measure	Mitigation Hierarchy
Air quality	Water spraying (3 times daily dry season); covered trucks; real-time monitoring	Minimise
Asbestos (Solu-Alade)	Licensed abatement; wet removal; double-bagging; hazardous waste landfill	Avoid / Minimise
Noise	Restrict hours (07:00 to 18:00); noise barriers near residential areas	Avoid / Minimise
Water quality	Bunded fuel storage; spill kits; no untreated discharge; monthly monitoring	Avoid / Minimise

Category	Key Mitigation Measure	Mitigation Hierarchy
Flooding	Oversized drainage (1:100-year storm + 30% climate factor); elevated electrical panels; raised floor slabs	Avoid
Wetland disturbance	30 to 50 metre buffers; Critical Habitat Assessment; biodiversity offset	Avoid / Offset
Labour influx	Local hiring (≥70% unskilled from host communities); Code of Conduct; zero-camp policy	Minimise
GBV/SEA/SH	Code of Conduct; training; confidential reporting; referral pathways; sanctions	Avoid / Minimise
Climate adaptation	Solar PV; cool roofs; natural ventilation; rainwater harvesting	Avoid / Minimise

Source: Multiple Development Services (2026)

10.2.5 Environmental and Social Management Plan (ESMP)

The ESMP (Chapter 7) provides a comprehensive management framework including:

- **Institutional responsibilities:** PIU (oversight), contractors (implementation), facility operators (operation), IESM (independent monitoring), regulators (enforcement)
- **Monitoring plan:** 30 indicators with baselines, targets, methods, frequency, and corrective action triggers, aligned with NESREA and lender limits
- **Reporting framework:** Daily logs, weekly reports, monthly reports, quarterly audits, annual performance reports, incident reports (24 to 48 hours)
- **Integrated HMWMP:** WHO colour-coding, segregation, autoclaving, asbestos abatement (Solu-Alade), spill response, LAWMA disposal
- **Integrated GBV Action Plan:** Code of Conduct, training, confidential reporting, referral pathways, sanctions, survivor-centred approach
- **Budget:** Indicative US$350,000 to 600,000 for Group 5 (excluding asbestos abatement)

10.2.6 Decommissioning and Abandonment

The decommissioning and abandonment framework (Chapter 8) addresses two scenarios:

Scenario	Timeframe	Key Requirements
Planned decommissioning	6 to 12 months	Sequential demolition; waste recycling (≥70% diversion); site restoration; closure certificate
Unplanned abandonment	30 to 90 days	Immediate safety response; damage assessment; repair, demolish, or abandon in place

Source: Multiple Development Services (2026)

10.3 Residual Impacts

After implementation of the mitigation measures and management plans, the following residual impacts remain.

Table 10.4: Residual Impacts – Group 5

Impact Category	Residual Impact	Significance (Mitigated)	Management
Wetland disturbance	Loss of a portion of wetland fringe at Agbowa (unavoidable)	Moderate (after offset)	Biodiversity offset under IFC PS6 (net gain target)
Vegetation loss	Permanent loss of 1 to 3 hectares of grassland and farmland mosaic	Minor	Revegetation of disturbed areas; tree replacement ratio ≥5:1
Noise	Occasional exceedance of daytime limits during essential works	Minor	Community notification; ongoing monitoring
Dust	Temporary exceedance during unusually dry and windy conditions	Minor	Enhanced watering; community liaison

Impact Category	Residual Impact	Significance (Mitigated)	Management
Traffic	Temporary congestion during material deliveries	Minor	Traffic Management Plan enforcement
Medical waste	Small residual risk of improper segregation	Negligible	Annual HMWMP training; monthly inspections
GBV/SEA/SH	Small residual risk of unreported incidents	Minor (with functioning GRM)	Confidential reporting channels; survivor-centred response
Climate	Residual flood risk at Ejirin and Orimedu during extreme events beyond 1:100-year storm	Minor	Insurance; emergency response plan

Source: Multiple Development Services (2026)

10.4 Recommendations

10.4.1 Recommendations for Project Implementation

Table 10.5: Implementation Recommendations – Group 5

Recommendation	Responsible	Timeline	Priority
Complete wet season baseline data collection (April to October 2026) before final ESIA submission	ESIA Consultant / PIU	Within 6 months	**Critical**
Conduct Critical Habitat Assessment for wetlands and	Biodiversity Specialist / PIU	Pre-construction	**Critical**

Recommendation	Responsible	Timeline	Priority
coastal areas before any vegetation clearance			
Confirm asbestos presence at Solu-Alade through laboratory analysis before refurbishment	Licensed asbestos surveyor / PIU	Pre-construction	**Critical**
Develop and sign biodiversity offset agreement with LASEPA and relevant authorities before any wetland disturbance	PIU / LASEPA / Biodiversity Specialist	Pre-construction	**Major**
Recruit and train GBV Specialist and female GRM focal points before construction begins	PIU	Pre-construction	**Major**
Establish project-level GRM (hotline, suggestion boxes, online portal) before construction	PIU	Pre-construction	**Major**
Contract IESM before construction begins	PIU	Pre-construction	**Major**
Obtain all LASEPA permits (waste, water abstraction, air, noise, asbestos abatement) before construction	Contractor / PIU	Pre-construction	**Major**
Implement local hiring programme (≥70% unskilled from host communities) from day one of construction	Contractor	Construction	**Major**

Recommendation	Responsible	Timeline	Priority
Conduct quarterly GBV awareness sessions for communities throughout construction	PIU / GBV Specialist	Construction	**Major**

Source: Multiple Development Services (2026)

10.4.2 Recommendations for Monitoring and Adaptive Management

Table 10.6: Monitoring and Adaptive Management Recommendations – Group 5

Recommendation	Responsible	Frequency	Success Indicator
Conduct real-time air quality monitoring (PM10, PM2.5) at all four sites during dry season construction	Contractor	Continuous	Exceedances reported within 24 hours; corrective actions taken
Conduct monthly water quality monitoring at Ejirin lagoon, Orimedu coastal waters, and Agbowa wetlands	Contractor	Monthly	TSS ≤30 mg/L; DO ≥5 mg/L; coliforms 0 CFU/100ml
Conduct weekly noise monitoring at nearest residential receptors	Contractor	Weekly	Daytime ≤55 dB(A); night-time ≤45 dB(A)
Review ESMP annually and after any major incident	PIU / IESM	Annually (or as triggered)	ESMP updated; AfDB approval for significant changes
Conduct annual community satisfaction survey	IESM	Annually	≥80% satisfied

Recommendation	Responsible	Frequency	Success Indicator
Report ESMP performance to AfDB and FMEnv quarterly	PIU	Quarterly	Reports submitted on time (100%)

Source: Multiple Development Services (2026)

10.4.3 Recommendations for Lender Approval (AfDB)

Table 10.7: Recommendations for AfDB Approval – Group 5

Recommendation	Justification	Evidence Required
Approve ESMP with condition that IESM is contracted before construction	AfDB ISS OS1 requires independent monitoring	IESM contract signed
Approve GBV Action Plan with condition that GBV Specialist is recruited before construction	AfDB ISS OS5 requires GBV prevention and response	GBV Specialist employment contract
Note that RAP is not required for Group 5 (zero PAPs)	AfDB ISS OS2 not triggered	Chapter 4, Section 4.8
Note that asbestos at Solu-Alade is suspected, not confirmed; require confirmation survey before refurbishment	AfDB ISS OS4 requires hazardous materials management	Asbestos laboratory results

Source: Multiple Development Services (2026)

10.5 Conclusion

The Environmental and Social Impact Assessment for the Epe/Ibeju-Lekki Axis (Group 5) PHC facilities has demonstrated that:

First, the project is fully justified. The severe deficiencies in Lagos State's healthcare infrastructure, the substantial economic, social, and environmental benefits, and the alignment with national, state, and international development priorities confirm the necessity of the LSHIP for the four Group 5 communities (Agbowa, Ejirin, Solu-Alade, Orimedu).

Second, the project meets lender and government requirements. This ESIA has been prepared in accordance with the FMEnv EIA Act CAP E12 LFN 2004 and the NESREA Regulations. It has also been aligned with the requirements of the AfDB Integrated Safeguards System (ISS), the IFC Performance Standards (PS1–PS8), and the World Bank ESF. Chapters 1 to 9 follow the prescribed FMEnv nine-chapter structure.

Third, adverse impacts can be effectively managed. The impact assessment identified a range of potential adverse impacts from Critical (asbestos at Solu-Alade if confirmed, GBV underreporting, coastal water quality degradation, flooding, coastal erosion) to Negligible (general operational waste). With the implementation of the mitigation measures (Chapter 6) and the ESMP (Chapter 7), all adverse impacts can be reduced to acceptable levels.

Fourth, the project delivers significant beneficial impacts. These include improved healthcare access for underserved communities (reducing travel time for an estimated 50,000 residents per new PHC), better maternal and child health outcomes (20 to 30 percent increase in facility-based deliveries), employment generation (110 to 135 direct jobs in Group 5 alone), local economic growth (60 to 70 percent local procurement target), reduced greenhouse gas emissions (solar PV), and strengthened GBV prevention systems.

Fifth, the project is climate-resilient. Climate-resilient design features (oversized drainage with +30% climate factor, elevated electrical panels, raised floor slabs, cool roofs, solar PV, rainwater harvesting) ensure that the facilities will remain operational under projected climate conditions for 2050 (RCP 8.5).

Sixth, the project avoids resettlement. No physical or economic displacement is required for Group 5 – zero PAPs identified. AfDB ISS OS2 and IFC PS5 are not triggered.

Seventh, the project protects biodiversity. The four sites are likely Critical Habitat under IFC PS6. The project will establish 30 to 50 metre buffers, avoid wetland disturbance where possible, and implement biodiversity offsets (net gain) where disturbance is unavoidable.

Eighth, the project addresses GBV/SEA/SH risks. A comprehensive GBV Action Plan (Chapter 7, Section 7.8) includes a worker Code of Conduct, training, confidential reporting channels, referral pathways (medical, psychosocial, legal, shelter), survivor-centred response, and sanctions for violations.

Ninth, the project manages hazardous materials. Asbestos at Solu-Alade (suspected) will be managed through licensed abatement, wet removal, double-bagging, labelled transport, and hazardous waste landfill. Medical waste will be managed through the HMWMP (Chapter 7, Section 7.7) aligned with WHO standards.

Tenth, the project is ready for implementation subject to conditions. The ESMP provides clear institutional responsibilities, a detailed monitoring plan with 30 indicators, a robust reporting framework, a realistic budget (US$350,000 to 600,000 for Group 5), capacity building, and emergency preparedness, GRM, and contractor ESMS requirements.

In conclusion, the Epe/Ibeju-Lekki Axis (Group 5) PHC facilities are recommended for approval by the Federal Ministry of Environment (FMEnv) and the African Development Bank (AfDB) subject to Critical Habitat Assessment, and asbestos confirmation survey as set out in the recommendations of this chapter.

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APPENDICES

Appendix 1.1: Terms of Reference (AfDB)

1. Background

The Lagos State Health Infrastructure Project (LSHIP) is a US$200 million health system strengthening programme implemented by the Lagos State Ministry of Health (LSMoH) with financing from the African Development Bank (AfDB). The project involves upgrading, rehabilitating, and constructing 29 Primary Healthcare (PHC) facilities across Lagos State, clustered into eight geographic axes.

2. Objective of the Consultancy

The objective of this consultancy is to prepare a comprehensive Environmental and Social Impact Assessment (ESIA) for the Badagry Axis Group 7 (APA, Igbogbele, and Farasime PHCs) in accordance with the AfDB Integrated Safeguards System (ISS, 2023/2024), FMEnv EIA Act CAP E12 LFN 2004, and international good practice standards.

3. Scope of Work

- Conduct baseline environmental and social studies
- Identify and assess potential environmental and social impacts
- Develop mitigation measures and management plans
- Prepare ESMP, HMWMP, GBV/SEA/SH Action Plan, and other safeguard instruments
- Conduct stakeholder engagement and establish GRM
- Prepare Resettlement Action Plan (RAP) where applicable
- Ensure compliance with AfDB Operational Safeguards OS1-OS10

4. Deliverables

- Inception Report
- Draft ESIA Report
- Final ESIA Report
- ESMP and all associated management plans
- Non-Technical Summary (English and Yoruba)

5. Timeline

The consultancy is to be completed within 12 weeks from the date of commencement.

Appendix 1.2: Project Risk Categorization

Contents:

1. AfDB Category 1 Classification

The LSHIP is classified as Category 1 (High Risk) under the AfDB Integrated Safeguards System (ISS, 2023/2024) based on:

- Multi-site complexity (29 facilities across 8 axes)
- Involuntary resettlement at 6 sites (>200 PAPs)
- Environmentally sensitive sites (wetlands, mangroves, creek margins)
- Presence of hazardous materials (asbestos at 9 sites)
- Scale of construction activities
- Lack of dedicated E&S capacity within PIU

2. FMEnv Category I Classification

The project is classified as **Category I** under the EIA Act CAP E12 LFN 2004 based on:

- Scale of project (29 facilities)
- Sensitivity of receptors (coastal, riverine, wetland ecosystems)
- Magnitude of impacts (resettlement, asbestos, labour influx)
- Public interest
- Cumulative impacts

3. IFC Category A Classification

The project is classified as **Category A** under IFC Performance Standards based on:

- Significant environmental and social impacts
- Sensitive ecological receptors
- Involuntary resettlement
- Potential for significant adverse impacts on affected communities

4. Equator Principles IV Category A

The project is classified as **Category A** under EP4 requiring:

- Independent ESIA
- Climate risk assessment (TCFD-aligned)
- Human rights due diligence
- Independent monitoring (IESM)
- 120-day public disclosure period

5. Risk Screening Checklist

- ☑

Involuntary resettlement

- ☑

Hazardous materials (asbestos)

- ☑

Sensitive ecosystems (wetlands, mangroves, creeks)

- ☑

Labour influx

- ☑

GBV/SEA/SH risks

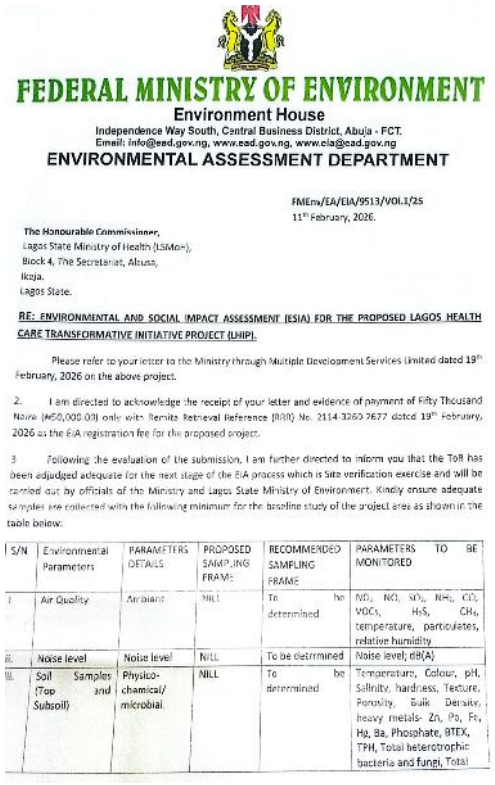
- ☑

Climate vulnerability

- ☑

Cumulative impacts

Appendix 1.3 FMEnv's statutory participation in the ESIA process



FEDERAL MINISTRY OF ENVIRONMENT
Environment House
Independence Way South, Central Business District, Abuja - FCT.
Email: info@ead.gov.ng, www.ead.gov.ng, www.eia@ead.gov.ng
ENVIRONMENTAL ASSESSMENT DEPARTMENT

FMEnv/EA/EIA/9513/VOL.1/25
11th February, 2026.

The Honourable Commissioner,
Lagos State Ministry of Health (LSMoH),
Block 4, The Secretariat, Alausa,
Ikeja.
Lagos State.

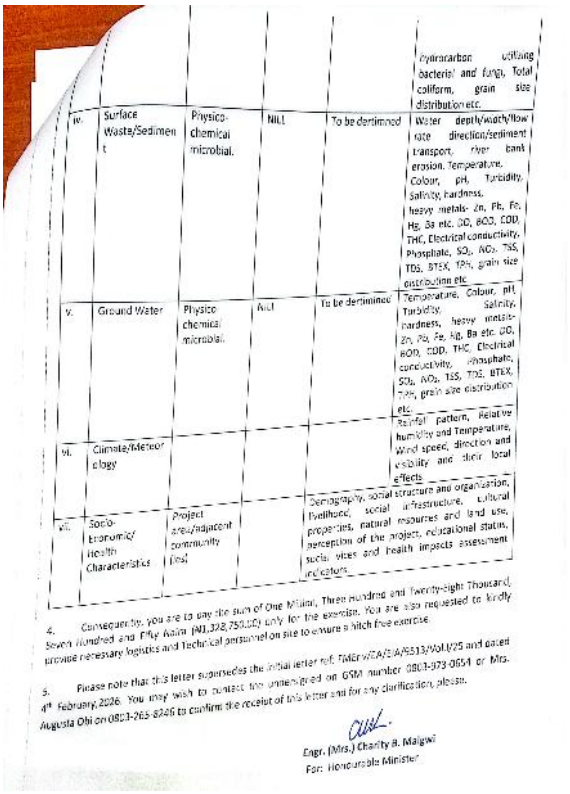
RE: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE PROPOSED LAGOS HEALTH CARE TRANSFORMATIVE INITIATIVE PROJECT (LHIP).

Please refer to your letter to the Ministry through Multiple Development Services Limited dated 19th February, 2026 on the above project.

2. I am directed to acknowledge the receipt of your letter and evidence of payment of Fifty Thousand Naira (₦50,000.00) only with Remita Retrieval Reference (RRR) No. 2114-3260-7677 dated 19th February, 2026 as the EIA registration fee for the proposed project.

3. Following the evaluation of the submission, I am further directed to inform you that the ToR has been adjudged adequate for the next stage of the EIA process which is Site verification exercise and will be carried out by officials of the Ministry and Lagos State Ministry of Environment. Kindly ensure adequate samples are collected with the following minimum for the baseline study of the project area as shown in the table below:

S/N	Environmental Parameters	PARAMETERS DETAILS	PROPOSED SAMPLING FRAME	RECOMMENDED SAMPLING FRAME	PARAMETERS TO BE MONITORED
i.	Air Quality	Ambient	NILL	To be determined	NO_2, NO, SO_2, NH_3, CO, VOCs, H_2S, CH_4, temperature, particulates, relative humidity
ii.	Noise level	Noise level	NILL	To be determined	Noise level; dB(A)
iii.	Soil Samples (Top and Subsoil)	Physico-chemical/ microbial.	NILL	To be determined	Temperature, Colour, pH, Salinity, hardness, Texture, Porosity, Bulk Density, heavy metals- Zn, Pb, Fe, Hg, Ba, Phosphate, BTEX, TPH, Total heterotrophic bacteria and fungi, Total

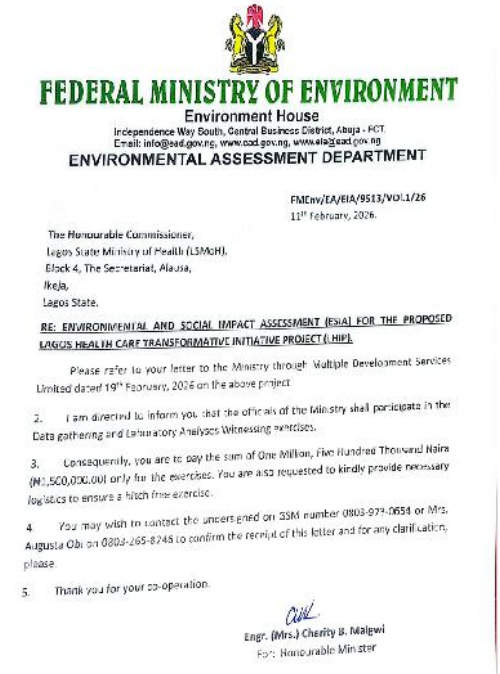


					hydrocarbon utilizing bacteria and fungi, Total coliform, grain size distribution etc.
iv.	Surface Waste/Sediment	Physico-chemical microbial.	NILL	To be determined	Water depth/width/flow rate direction/sediment transport, river bank erosion. Temperature, Colour, pH, Turbidity, Salinity, hardness, heavy metals- Zn, Pb, Fe, Hg, Ba etc. DO, BOD, COD, THC, Electrical conductivity, Phosphate, SO_4, NO_2, TSS, TDS, BTEX, TPH, grain size distribution etc.
v.	Ground Water	Physico chemical microbial.	NILL	To be determined	Temperature, Colour, pH, Turbidity, Salinity, hardness, heavy metals- Zn, Pb, Fe, Hg, Ba etc. DO, BOD, COD, THC, Electrical conductivity, Phosphate, SO_4, NO_2, TSS, TDS, BTEX, TPH, grain size distribution etc.
vi.	Climate/Meteorology				Rainfall pattern, Relative humidity and Temperature, Wind speed, direction and visibility and their local effects
vii.	Socio-Economic/ Health Characteristics	Project area/Adjacent community (ies)		Demography, social structure and organization, livelihood, social infrastructure, cultural properties, natural resources and land use, perception of the project, educational status, socio-vices and health impacts assessment indicators.

4. Consequently, you are to pay the sum of One Million, Three Hundred and Twenty-Eight Thousand, Seven Hundred and Fifty Naira (₦1,328,750.00) only for the exercise. You are also requested to kindly provide necessary logistics and Technical personnel on site to ensure a hitch free exercise.

5. Please note that this letter supersedes the initial letter ref: FMEnv/EA/EIA/9513/Vol.M25 and dated 4th February, 2026. You may wish to contact the undersigned on GSM number 0803-973-0654 or Mrs. Augusta Obi on 0803-265-8246 to confirm the receipt of this letter and for any clarification, please.

Engr. (Mrs.) Charity B. Malgwi
For: Honourable Minister



FEDERAL MINISTRY OF ENVIRONMENT
Environment House
Independence Way South, Central Business District, Abuja - FCT.
Email: info@ead.gov.ng, www.ead.gov.ng, www.eia@ead.gov.ng
ENVIRONMENTAL ASSESSMENT DEPARTMENT

FMEnv/EA/EIA/9513/VOL.1/26
11th February, 2026.

The Honourable Commissioner,
Lagos State Ministry of Health (LSMoH),
Block 4, The Secretariat, Alausa,
Ikeja,
Lagos State.

RE: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE PROPOSED LAGOS HEALTH CARE TRANSFORMATIVE INITIATIVE PROJECT (LHIP).

Please refer to your letter to the Ministry through Multiple Development Services Limited dated 19th February, 2026 on the above project.

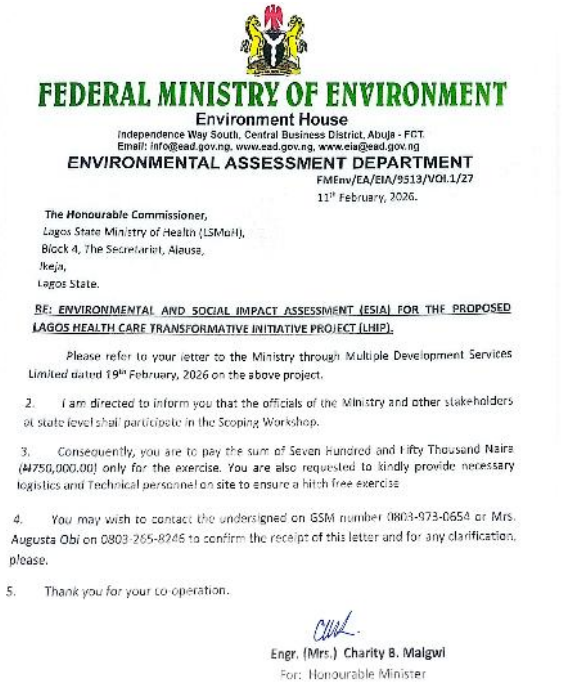
2. I am directed to inform you that the officials of the Ministry shall participate in the Data gathering and Laboratory Analyses Witnessing exercises.

3. Consequently, you are to pay the sum of One Million, Five Hundred Thousand Naira (₦1,500,000.00) only for the exercises. You are also requested to kindly provide necessary logistics to ensure a hitch free exercise.

4. You may wish to contact the undersigned on GSM number 0803-973-0654 or Mrs. Augusta Obi on 0803-265-8246 to confirm the receipt of this letter and for any clarification, please.

5. Thank you for your co-operation.

Engr. (Mrs.) Charity B. Malgwi
For: Honourable Minister



FEDERAL MINISTRY OF ENVIRONMENT
Environment House
Independence Way South, Central Business District, Abuja - FCT.
Email: info@ead.gov.ng, www.ead.gov.ng, www.eia@ead.gov.ng
ENVIRONMENTAL ASSESSMENT DEPARTMENT

FMEnv/EA/EIA/9513/VOL.1/27
11th February, 2026.

The Honourable Commissioner,
Lagos State Ministry of Health (LSMoH),
Block 4, The Secretariat, Alausa,
Ikeja,
Lagos State.

RE: ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE PROPOSED LAGOS HEALTH CARE TRANSFORMATIVE INITIATIVE PROJECT (LHIP).

Please refer to your letter to the Ministry through Multiple Development Services Limited dated 19th February, 2026 on the above project.

2. I am directed to inform you that the officials of the Ministry and other stakeholders at state level shall participate in the Scoping Workshop.

3. Consequently, you are to pay the sum of Seven Hundred and Fifty Thousand Naira (₦750,000.00) only for the exercise. You are also requested to kindly provide necessary logistics and Technical personnel on site to ensure a hitch free exercise.

4. You may wish to contact the undersigned on GSM number 0803-973-0654 or Mrs. Augusta Obi on 0803-265-8246 to confirm the receipt of this letter and for any clarification, please.

5. Thank you for your co-operation.

Engr. (Mrs.) Charity B. Malgwi
For: Honourable Minister

Appendix 2: Proposed Project Sites

S/N	PHC Facilities	LGA	LCDA	Status	Coordinates	
Group 1						
1	Agboju PHC	Amuwo Odofin	Oriade LCDA	Construction	6.458077	3.283238
2	Oridilu PHC	Ajeromi Ifelodun	Ifelodun LCDA	Refurbishment	6.464410	3.351390
3	Bada PHC	Alimosho	Ayobo Ipaja LCDA	Refurbishment	6.590535	3.228266
4	Ogbomosotedo PHC	Alimosho	Egbe Idimu LCDA	Refurbishment	6.575358	3.258728
Group 2						
1	Isolo PHC	Oshodi-Isolo	Isolo LCDA	Refurbishment	6.528600	3.320807
2	Oba Salami PHC	Lagos Mainland	Yaba LCDA	Refurbishment	6.522283	3.368430
3	Ojodu PHC	Ikeja	Ojodu LCDA	Construction	6.631394	3.342287
4	Otumara PHC	Lagos Mainland	Yaba LCDA	Construction	6.477588	3.374566
Group 3						
1	Omolaiye PHC	Ikorodu	Ikorodu North LCDA	Refurbishment	6.66839365	3.47307938
2	Eruwen PHC	Ikorodu	Ikorodu North LCDA	Construction	6.60440414	3.54358095
3	Olorunda PHC	Ikorodu	Ikorodu North LCDA	Construction	6.66833451	3.58520869
4	Agura PHC	Ikorodu	Ikorodu LGA	Construction	6.57996161	3.62752998

Group 4						
1	Imota PHC	Ikorodu	Imota LCDA	Refurbishment	6.66005734	3.66968297
2	Bayeiku PHC	Ikorodu	Igbogbo Bayeiku LCDA	Refurbishment	6.546943	3.543106
3	Abule Eko PHC	Ikorodu	Ijede LCDA	Refurbishment	6.58331880	3.59483036
4	Owutu PHC	Ikorodu	Ikorodu West LCDA	Construction	6.63301273	3.48131561
Cluster 5						
1	Agbowa PHC	Epe	Ikosi Ejirin LCDA	Construction	6.639779	3.712229
2	Ejirin PHC	Epe,	Ikosi Ejirin LCDA	Refurbishment	6.612939	3.897653
3	Solu Alade PHC	Ibeju Lekki	Ibeju Lekki LCDA	Refurbishment	6.43917	3.78986
4	Orimedu PHC	Ibeju Lekki	Ibeju Lekki LCDA	Construction	6.44066	3.90141
Group 6						
1	Magbon PHC	Ibeju Lekki	Lekki LCDA	Refurbishment	6.42880	3.99687
2	Idasho PHC	Ibeju Lekki	Lekki LCDA	Refurbishment	6.42940	3.98636
3	Idotun PHC	Ibeju Lekki	Lekki LCDA	Refurbishment	6.42451	4.2303
Group 7						
1	APA PHC	Badagry	Badagry West LCDA	Construction	6.430864	2.823958
2	Igbogbele PHC	Badagry	Badagry West LCDA	Refurbishment	6.423141	2.779165
3	Farasime PHC	Badagry	Badagry West LCDA	Refurbishment	6.425841	2.714320

Group 8						
1	Ibereko PHC	Badagry	Olorunda LCDA	Refurbishment	6.441703	2.919342
3	Agboyi PHC	Kosofe	Agboyi Ketu LCDA	Refurbishment	6.578345	3.409531

Appendix 2.2: Borrow Pit Management Plan (BPMP)

Contents:

1. Introduction

This Borrow Pit Management Plan (BPMP) provides procedures for the identification, assessment, operation, and rehabilitation of borrow pits used to source construction materials for the LSHIP Badagry Axis Group 7.

2. Site Selection Criteria

- Minimum 500m distance from residential areas
- Minimum 100m distance from water bodies (Badagry Creek)
- No borrow pits in wetlands or sensitive ecosystems
- Geotechnical suitability (sand/gravel quality)
- Access road availability
- Land ownership verification
- Community consent

3. Borrow Pit Assessment Checklist

- □

Geotechnical assessment completed

- □

Environmental screening conducted

- □

Community consultation held

- □

Land ownership verified

- □

Access road assessed

- □

Rehabilitation plan developed

4. Rehabilitation Plan

- Regrade slopes to stable angle (≤1:2)
- Apply topsoil (minimum 15cm)
- Revegetate with native species
- Restore drainage patterns
- Monitor for 12 months post-rehabilitation
- Success criteria: ≥80% vegetation cover

5. Monitoring Checklist

- Weekly: Slope stability, drainage, erosion
- Monthly: Water quality (if near water body)
- Quarterly: Vegetation cover (post-rehabilitation)
- Annually: Full compliance audit

6. Reporting Templates

- Borrow pit operation report (monthly)
- Borrow pit rehabilitation report (quarterly)
- Compliance closure report (final)

Appendix 2.3: LSHIIP Campsite Management Plan

1. Introduction

This Campsite Management Plan provides procedures for the establishment, operation, and closure of worker camps associated with the LSHIP where applicable.

2. Campsite Location Criteria

- Minimum 500m from residential areas
- Access to water and electricity
- Suitable drainage and terrain
- Community consent obtained
- No sensitive ecosystems

3. Site Layout Plans

- Accommodation area (tents/containers)
- Kitchen and dining area
- Sanitation facilities
- Waste management area
- First aid station
- Recreation area

4. Sanitation and Waste Management

- Adequate toilets (1 per 15 persons)
- Handwashing stations
- Solid waste collection bins
- Segregation of waste
- Regular collection and disposal

5. Camp Rules and Regulations

- No alcohol or drugs
- No visitors without permission
- Curfew hours (22:00-06:00)
- Respect for community norms
- Prohibition of GBV/SEA/SH
- Mandatory Code of Conduct signing

6. Community Liaison

- Regular community meetings
- Grievance reporting channels
- Local hiring preference (≥50%)

7. Camp Closure and Restoration

- Remove all structures
- Collect all waste
- Restore site to original condition
- Conduct community sign-off

Appendix 2.4: LSHIP Generic Labour Influx Management Plan (LIMP)

1. Introduction

This Labour Influx Management Plan (LIMP) provides procedures for managing the expected influx of construction workers to minimise negative social impacts and maximise local benefits, where applicable.

2. Labour Demand Forecast

Labour Category	Peak Number	Local Hiring Target
Skilled workers	30-50	≥30%
Semi-skilled	40-70	≥40%
Unskilled	80-120	≥50%
Management	5-10	≥30%

3. Local Hiring Strategy

- Community notification of job opportunities
- Registration of local workers
- Skills assessment
- Priority hiring from host communities
- Gender-balanced hiring (≥15% women)

4. Worker Conduct Rules

- Code of Conduct must be signed
- Prohibition of GBV/SEA/SH
- Respect for community norms
- No alcohol/drugs on site
- Reporting of incidents

5. Community Liaison Protocol

- Community Liaison Officer (CLO) appointed
- Regular community meetings
- Grievance reporting channels
- 48-hour grievance acknowledgement
- 14-day grievance resolution

6. Worker Registration Form

- Personal details
- Contact information
- Skills and experience

- LGA of residence
- Identification document copy
- Code of Conduct signed

7. Local Hiring Monitoring Template

- Number of workers hired (local vs non-local)
- Skills categories
- Gender breakdown
- Duration of employment
- Wages paid

Appendix 2.5: LSHIP Generic CASHES Plan

1. Introduction

The Community Affairs, Safety, Health, Environment and Security (CASHES) Plan provides a comprehensive framework for managing community relations, worker safety, public health, environmental protection, and site security during the LSHIP.

2. Community Affairs

- Community Liaison Officer (CLO) appointed
- Community entry protocols
- Regular community meetings (monthly)
- Grievance Redress Mechanism (GRM)
- Local content implementation
- Donations and community support

3. Safety

- Occupational Health and Safety (OHS) Plan
- PPE requirements
- Safety training and induction
- Emergency response procedures
- Incident reporting and investigation
- First aid stations

4. Health

- Medical waste management
- Sanitation and hygiene
- Water quality protection
- Noise and dust control
- Communicable disease prevention
- GBV/SEA/SH prevention and response

5. Environment

- ESMP implementation
- Air quality monitoring
- Water quality monitoring
- Waste management
- Erosion and sediment control
- Climate resilience

6. Security

- Site security assessment
- Security personnel deployment
- Access control
- Lighting and fencing
- Security incident reporting
- Coordination with local police

7. Incident Reporting Form

- Date and time of incident
- Type of incident (safety, health, environment, security)
- Location
- Description
- Immediate action taken
- Root cause analysis
- Corrective actions
- Signature

8. Community Complaint Form

- Complainant details
- Complaint description
- Date of complaint
- Action taken
- Resolution date
- Complainant satisfaction

Appendix 2.6: LSHIP Generic Supply Chain Risk Assessment

1. Introduction

This Supply Chain Risk Assessment identifies and evaluates environmental and social risks associated with the procurement of materials and services for the LSHIP.

2. Risk Assessment Methodology

- Risk identification (environmental, social, reputational)
- Risk rating (likelihood x severity)
- Mitigation measures
- Monitoring and reporting

3. Material Supply Risks

Material	Risk	Likelihood	Severity	Mitigation
Sand and Gravel	Habitat destruction	Medium	High	Licensed borrow pits; rehabilitation plan
Cement	Dust pollution	High	Medium	Enclosed storage; dust control
Steel	Supply chain labour risks	Medium	Medium	Supplier screening; Code of Conduct
Wood	Deforestation	Low	Medium	Certified suppliers; reforestation
Solar Panels	E-waste at end of life	Medium	Medium	Take-back agreement; recycling

4. Supplier Screening Criteria

- Environmental compliance
- Social compliance (labour, human rights)
- FMEnv/NESREA registration
- LASEPA registration
- Previous performance
- Supply chain transparency

5. Local Supplier Registration Form

- Business name
- Registration number
- Address and contact
- Products/services offered
- Years in business
- Staff size
- Women-owned (yes/no)

6. Procurement Preference Implementation Plan

- ≥50% local procurement target
- ≥20% women-owned business target
- Transparent procurement process
- Supplier capacity building

7. Monitoring Protocol

- Monthly procurement records review
- Quarterly supplier performance review
- Annual supply chain audit

Appendix 3: Chain-of-Custody Forms (Refined & on-Ready)

BATO CHEMICAL LABORATORIES LTD	ISSUE NO: 001	
CHAIN OF CUSTODY SHEET	ISSUE DATE: May 2019	Last Review Date: March 18th 2025
	DOC. NO: BCL/QA/099	
	Version : 3	Next Review Date: March 2027
	Page 1 of 9	

NAME OF CLIENT:	Natural Eco Capital
P.O No	
Name of Project:	ESIA of LSHTIP
DATE:	April 1-9, 2026
TYPE OF SAMPLE:	SURFACE WATER SAMPLES
NATURE OF ANALYSIS:	PHYSIO-CHEM & MICROBIAL ANALYSIS

S/N	SAMPLE ID / LOCATION	Sampling Point Coordinates (GPS) -N	Sampling Point Coordinates (GPS) -E	Sampling Temperature (°C)
1.	Agboyi PHC SW SP1	6.578345	3.409531	
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				
21.				
22.				
Comments:		Parameters includes: Appearance,True Colour (Hz),Odour,EC (µS/cm),Turbidity (NTU),pH,TDS (mg/L),Total Solids (mg/L),Total Hardness (mg/L) Total Alkalinity (mg/L),Total Acidity,Residual Chlorine,Free CO_2,Chloride (mg/L),Nitrate (mg/L),Sulphate (mg/L),Heavy Metals,DO,(mg/L),BOD (mg/L),COD (mg/L),Total Coliform (CFU/ml),E. coli (CFU/ml),Yeast/Mould,Total Plate Count		

CLIENT'S REP

BATO CHEM LABORATORIES LTD

BATO CHEMICAL LABORATORIES LTD

BATO CHEMICAL LABORATORIES LTD	ISSUE NO: 001	
CHAIN OF CUSTODY SHEET	ISSUE DATE: May 2019	Last Review Date: March 18th 2025
	DOC. NO: BCL/QA/099	
	Version : 3	Next Review Date: March 2027
	Page 1 of 1	

NAME OF CLIENT:	Natural Eco Capital
P.O No	
Name of Project:	ESIA of LSHTIP
DATE:	April 1-9, 2026
TYPE OF SAMPLE:	GROUNDWATER SAMPLES
NATURE OF ANALYSIS:	PHYSIO-CHEM & MICROBIAL ANALYSIS

S/N	SAMPLE ID / LOCATION	Sampling Point Coordinates (GPS) -N	Sampling Point Coordinates (GPS) -E	Sampling Temperature (°C)
1.	Agboju PHC SP1	6.458077,	3.283238	
2.	Agboju PHC SP2	6.458147,	3.282824	
3.	Oridilu PHC SP1	6.464410,	3.351390	
4.	Oridilu PHC SP2	6.464234,	3.351147	
5.	Bada PHC SP1	6.590535,	3.228266	
6.	Bada PHC SP2	6.590434,	3.228280	
7.	Ogbomosotedo PHC SP1	6.575358,	3.258728	
8.	Ogbomosotedo PHC SP2	6.575578,	3.258614	
9.	Isolo PHC SP1	6.528600,	3.320794	
10.	Isolo PHC SP2	6.528855,	3.320839	
11.	Oba Salami PHC SP1	6.522283,	3.368430	
12.	Oba Salami PHC SP2	6.522136,	3.368640	
13.	Ojodu PHC SP1	6.631394,	3.342318	
14.	Ojodu PHC SP2	6.631077,	3.342094	
15.	Otumara PHC SP1	6.477588,	3.374566	
16.	Otumara PHC SP2	6.477751,	3.374845	
17.	Omolaiye PHC SP1	6.668394,	3.473079	
18.	Omolaiye PHC SP2	6.668900,	3.473180	
19.	Eruwen PHC SP1	6.604404,	3.543580	
20.	Eruwen PHC SP2	6.604160,	3.544082	
21.	Olorunda PHC SP1	6.668335,	3.585208	
22.	Olorunda PHC SP2	6.669100,	3.585910	
23.	Agura PHC SP1	6.579962,	3.627529	
24.	Agura PHC SP2	6.580100,	3.628170	
25.	Imota PHC SP1	6.660057,	3.669991	
26.	Imota PHC SP2	6.660400,	3.670510	
27.	Bayeiku PHC SP1	6.546943,	3.543106	
28.	Bayeiku PHC SP2	6.547100,	3.542888	
Comments:		Parameters includes: Appearance,True Colour (Hz),Odour,EC (µS/cm),Turbidity (NTU),pH,TDS (mg/L),Total Solids (mg/L),Total Hardness (mg/L) Total Alkalinity (mg/L),Total Acidity,Residual Chlorine,Free CO_2,Chloride (mg/L),Nitrate (mg/L),Sulphate (mg/L),Heavy Metals,DO,(mg/L),BOD (mg/L),COD (mg/L),Total Coliform (CFU/ml),E. coli (CFU/ml),Yeast/Mould,Total Plate Count		

Appendix 4: FMEnv-accredited laboratory



Accreditation No: 0004575

FEDERAL MINISTRY OF ENVIRONMENT

ACCREDITATION TO OPERATE AS ENVIRONMENTAL CONSULTANT

The Permanent Secretary of the Federal Ministry of Environment (FMENV), hereby accredits the bearer whose particulars appear below to operate as Environmental Consultant pursuant to an Application for Registration/Renewal dated 11TH day of FEBRUARY, 2022

1. Full Name of Consultant: BATO CHEMICAL LABORATORIES LIMITED
2. Location of Business Premises/Laboratory: LASUN OLAITAN AVENUE, RIVERVIEW ESTATE, ISHERI NORTH, OGUN STATE
3. Year of Incorporation of Business: 6TH FEBRUARY, 1998
4. Area(s) of Competence: ENVIRONMENTAL LABORATORY SERVICES

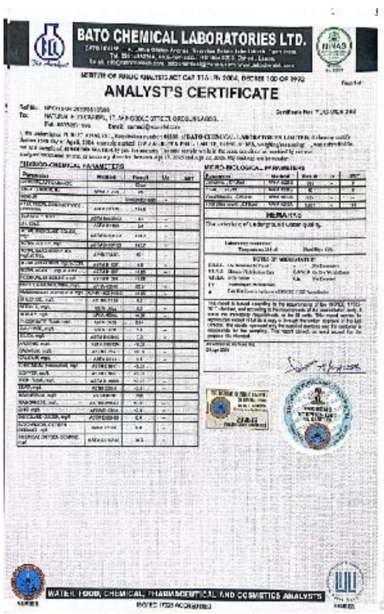
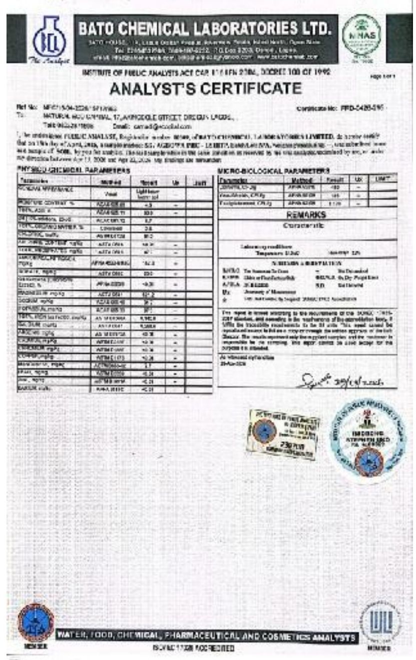
This Accreditation is granted subject to compliance with all regulations, Guidelines, Standards and Control criteria as may be issued by the Federal Ministry of Environment from time to time.

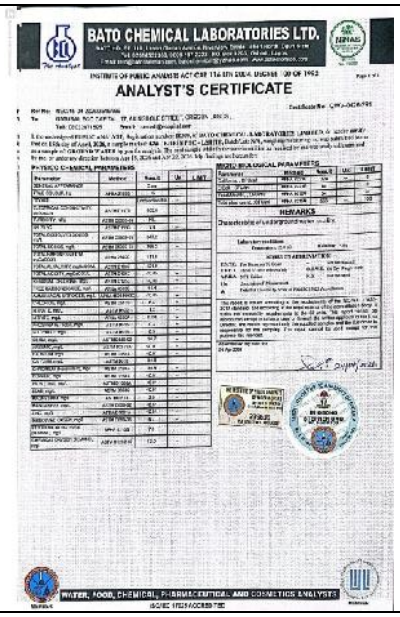
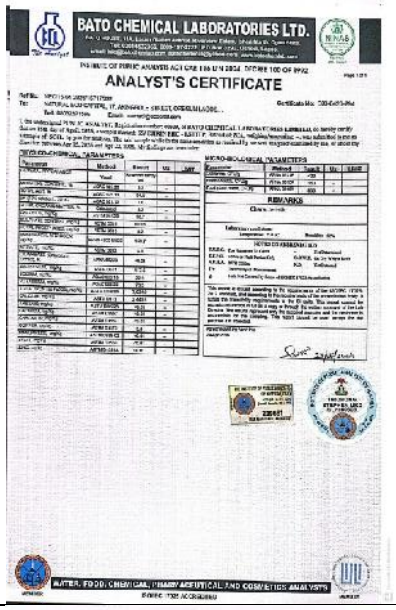
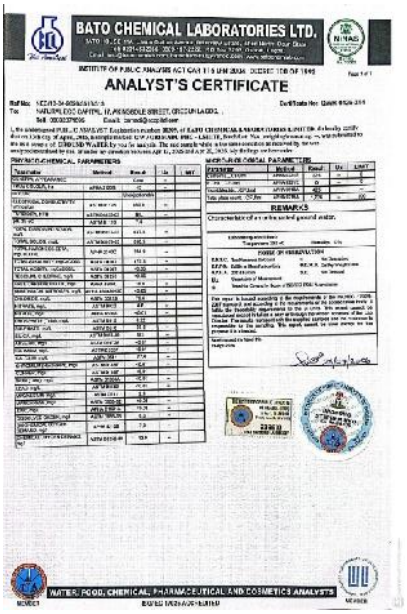
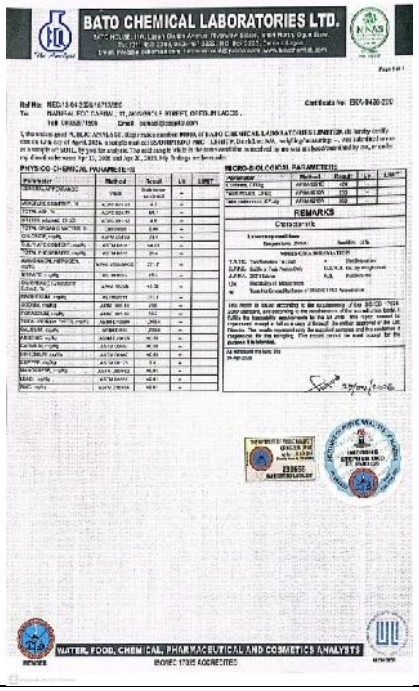
Date of Issue: 26TH JANUARY, 2022 Expiry Date: 25TH JANUARY, 2027

Seal of the Federal Ministry of Environment

FMENV shall not be liable to any claim(s) under this permit

Permanent Secretary

Agbowa PHC		

Ejinrin PHC		
Orimedu PHC		

Appendix 5: Summary of Baseline Laboratory Results

GROUNDWATER QUALITY

Parameter	Agbowa PHC SP1	Agbowa PHC SP2	Ejirin PHC SP1	Ejirin PHC SP2	Solu Alade PHC SP1	Solu Alade PHC SP2	Orimedu PHC SP1	Orimedu PHC SP2	Regulatory Limit (WHO/NESREA/FMEnv/IFC)
Coordinates	6.639779, 3.712229	6.640133, 3.712409	6.612939, 3.897653	6.612821, 3.897735	6.439170, 3.789860	6.439370, 3.788060	6.440660, 3.901410	6.439280, 3.902030	—
Appearance	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear	Clear
True Colour (Hz)	<5	<5	<5	<5	<5	<5	<5	<5	<15
Odour	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable
EC (µS/cm)	165.6	850.0	850.0	850.0	192.6	185.0	850.0	850.0	1000
Turbidity (NTU)	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	5
pH	5.4	7.6	7.6	7.6	7.6	7.5	7.6	7.6	6.5–8.5
TDS (mg/L)	124.2	637.5	637.5	637.5	144.4	140.0	637.5	637.5	500
Total Solids (mg/L)	142.7	656.5	656.5	656.5	163.0	160.0	656.5	656.5	500
Total Hardness (mg/L)	19.1	204.9	204.9	204.9	271.9	260.0	204.9	204.9	200
Total Alkalinity (mg/L)	4.6	175.8	175.8	175.8	36.5	34.0	175.8	175.8	200
Chloride (mg/L)	9.1	79.6	79.6	79.6	<0.05	<0.05	79.6	79.6	250
Nitrate (mg/L)	8.1	4.6	4.6	4.6	<0.05	<0.05	4.6	4.6	50

Sulphate (mg/L)	5.1	50.2	50.2	50.2	16.4	15.0	50.2	50.2	250
Heavy Metals	<0.01	<0.01	<0.01	<0.01	<0.05	<0.01	<0.01	<0.01	WHO Limits
DO (mg/L)	6.6	6.6	6.6	6.6	13.0	12.5	6.6	6.6	≥5
BOD (mg/L)	9.0	7.0	7.0	7.0	0.87	1.0	7.0	7.0	≤6
COD (mg/L)	16.0	12.0	12.0	12.0	0.01	0.02	12.0	12.0	≤10
Total Coliform (CFU/ml)	865	226	226	226	312	300	226	226	0
E. coli (CFU/ml)	10	0	0	0	0	0	0	0	0
Yeast/Mould (CFU/ml)	625	425	425	425	881	850	425	425	—
Total Plate Count	1,861	1,726	1,726	1,726	1,365	1,300	1,726	1,726	≤100

SOIL QUALITY

Parameter	Agbowa SP1	Agbowa SP2	Agbowa SP3	Ejirin SP1	Ejirin SP2	Ejirin SP3	Solu Alade SP1	Solu Alade SP2	Solu Alade SP3	Orimedu SP1	Orimedu SP2	Orimedu SP3	Regulatory Limit
Coordinates	6.639779 3.712229	6.639900, 3.712310	6.640133, 3.712409	6.612939, 3.897653	6.613200, 3.897700	6.612811, 3.897735	6.439170, 3.789860	6.439580, 3.789740	6.439370, 3.788060	6.440660, 3.901410	6.440100, 3.901200	6.439800, 3.901000	—
Appearance	Light brown loamy	Light brown loamy	Light brown loamy	Brownish sandy	Brownish sandy	Brownish sandy	Greyish sandy	Greyish sandy	Greyish sandy	Dark brown sandy	Dark brown sandy	Dark brown sandy	—
Moisture (%)	4.6	4.5	4.7	2.3	2.2	2.4	1.4	1.3	1.5	4.3	4.2	4.4	—
Total Ash (%)	93.0	92.8	93.2	94.5	94.2	94.8	98.2	98.0	98.4	94.7	94.5	94.9	—
Ph	8.7	8.6	8.8	7.0	6.9	7.1	6.9	6.8	7.0	8.8	8.7	8.9	6.0–8.5
Organic Matter (%)	2.5	2.4	2.6	3.2	3.1	3.3	0.39	0.38	0.40	0.96	0.95	0.97	—
Chloride (mg/kg)	81.2	80.0	82.0	58.7	57.5	59.5	141.4	140.0	142.0	73.4	72.5	74.0	250
Sulphate (mg/kg)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1000
Phosphate (mg/kg)	47.7	46.5	48.5	6.2	6.0	6.4	29.2	28.5	30.0	21.4	20.5	22.0	—
Ammoniacal N (mg/kg)	182.3	180.0	185.0	159.7	157.0	162.0	392.1	388.0	395.0	271.7	268.0	275.0	—
Nitrate (mg/k	25.0	24.0	26.0	4.9	4.8	5.1	16.5	16.0	17.0	15.3	15.0	15.6	50

g)													
Oil/Grease (%)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	1
Magnesium (mg/kg)	521.2	515.0	525.0	417.6	412.0	420.0	204.9	202.0	208.0	383.1	380.0	386.0	—
Sodium (mg/kg)	31.7	31.0	32.2	22.9	22.5	23.2	55.2	54.5	56.0	28.6	28.0	29.0	200
Potassium (mg/kg)	87.3	86.0	88.5	76.3	75.0	77.5	147.4	145.0	149.0	69.2	68.0	70.5	—
Iron (mg/kg)	4,140	4,050	4,200	7,034.9	6,900	7,100	554.9	540	570	1,348.4	1,320	1,380	50,000
Calcium (mg/kg)	4,298.6	4,200	4,350	3,443.5	3,400	3,500	338.0	330	345	1,263.6	1,240	1,280	—
Arsenic (mg/kg)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	20
Cadmium (mg/kg)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	3

Chromium (mg/kg)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	100
Copper (mg/kg)	7.7	7.5	7.9	5.8	5.6	6.0	1.7	1.6	1.8	3.3	3.2	3.4	100
Manganese (mg/kg)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	—
Lead (mg/kg)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	85
Zinc (mg/kg)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	300
Coliforms (CFU/g)	<80	<78	<82	<23	<22	<24	<30	<29	<31	<24	<23	<25	0
Yeast/Mould (CFU/g)	185	180	190	160	155	165	190	185	195	200	195	205	—
Total Plate Count (CFU/g)	1,120	1,100	1,140	835	820	850	920	900	940	969	950	990	≤1000

Appendix 6 Asbestos Management Plan (AMP)

1.0 Introduction

Asbestos-Containing Materials (ACMs) were identified or suspected in roofing sheets, ceiling boards, and insulation materials across Group 5 sites (Agbowa, Ejirin, SoluAlade, and Orimedu), with potential presence in older ancillary structures. This Asbestos Management Plan (AMP) provides procedures for safe identification, removal, handling, transport, and disposal of ACMs in compliance with:

- FMEnv National Environmental Regulations (2011)
- LASEPA Environmental Safety Guidelines
- AfDB ISS (2024) – OS1, OS4, OS5
- WHO Asbestos Guidelines (2014)
- ILO Convention C162 (Safety in the Use of Asbestos)

The AMP ensures zero exposure to workers, patients, and community members during refurbishment and demolition works.

2.0 Objectives of the AMP

- Prevent occupational and community exposure to asbestos fibers.
- Ensure safe removal, containment, and disposal of ACMs.
- Comply with FMEnv, LASEPA, and AfDB ISS requirements.
- Protect vulnerable groups (children, elderly, pregnant women).
- Establish monitoring, reporting, and emergency response procedures.
- Ensure only licensed asbestos contractors conduct removal activities.

3.0 Asbestos Identification & Survey Procedures

3.1 Pre-Removal Survey

A licensed FMEnv-accredited asbestos assessor shall conduct:

- Visual inspection of roofing sheets, ceiling boards, insulation, pipe lagging.
- Material sampling using wet-method extraction.
- Laboratory analysis using PCM/TEM methods.
- Risk classification (friable vs non-friable).
- Site-specific ACM inventory (to be included in Appendix 8.X).

3.2 Suspected ACM Locations (Group 5 Sites: Agbowa, Ejirin, SoluAlade, Orimedu)

- **Agbowa:** Suspected ACMs in older roofing sheets and ancillary storage facilities.
- **Ejirin:** Older ancillary structures and ceiling insulation materials.
- **SoluAlade:** Old roofing sheets and ceiling boards in primary structures.
- **Orimedu:** Precautionary screening required for older roofing and partition boards.

4.0 Asbestos Removal Procedures

4.1 Contractor Requirements

Only FMEnv-licensed asbestos abatement contractors may perform removal. Contractor must submit:

- Asbestos Removal Plan (ARP)
- Worker training certificates
- PPE inventory
- Waste transport permit
- Emergency response plan

4.2 Site Preparation

- Establish 20–50 m exclusion zone around work area.
- Install warning signage ("DANGER: ASBESTOS – KEEP OUT").
- Erect temporary fencing and restrict public access.
- Shut down HVAC systems to prevent fiber spread.
- Notify LASEPA and FMEnv 72 hours before removal.

4.3 Removal Method (Wet Method – WHO Standard)

- Wet ACMs continuously with surfactant solution.
- Remove sheets intact; no breaking, cutting, drilling, or sanding.
- Use hand tools only; no power tools.
- Place ACMs in 6-mil thick double-bagged asbestos waste bags.
- Seal bags with duct tape and label: "ASBESTOS WASTE – DO NOT OPEN".

4.4 Worker Protection

Workers must use:

- Full-face P3 respirators
- Disposable coveralls
- Nitrile gloves
- Rubber boots
- Eye protection

Workers must undergo:

- Medical screening
- Fit-testing
- Asbestos safety training

5.0 Transport & Disposal Procedures

5.1 Transport

- Use FMEnv-licensed hazardous waste transporters.
- Vehicles must have sealed compartments.
- Transport directly to approved disposal sites.

5.2 Disposal

Disposal must occur at:

- LAWMA-approved hazardous waste landfill
- FMEnv-licensed asbestos burial pit

Waste manifest must include:

- Quantity of ACM removed
- Date/time of transport
- Disposal site signature
- Chain-of-custody documentation

6.0 Air Monitoring & Clearance Testing

6.1 During Removal

- Continuous air monitoring using PCM/TEM.
- Acceptable limit: ≤ 0.1 fibers/ml (WHO standard).
- Stop work if levels exceed threshold.

6.2 Post-Removal Clearance

- Conduct final air sampling.
- Perform visual inspection for debris.
- Issue Asbestos Clearance Certificate (Appendix 6.).

7.0 Emergency Response Procedures

Emergency Scenarios:

- Accidental breakage of ACM
- Bag rupture
- Worker exposure
- Unauthorized access to exclusion zone

Response Steps:

- Stop work immediately.
- Evacuate non-essential personnel.
- Wet contaminated area.
- Seal broken ACM in new bags.
- Conduct emergency air monitoring.
- Report incident to PIU, LASEPA, FMEnv within 24 hours.

- Document corrective actions.

8.0 Community Protection Measures

- Conduct community sensitization before removal across Group 5 communities (Agbowa, Ejirin, SoluAlade, Orimedu).
- Provide GBV-sensitive communication for women and elderly.
- Ensure school children are kept away from work zones.
- Install dust screens and wind barriers.
- Maintain 24-hour CLO presence during removal.

9.0 Roles & Responsibilities

Entity	**Responsibility**
PIU (LSMoH)	Oversight, approvals, reporting to AfDB/FMEnv
Contractor	Safe removal, PPE, waste transport, documentation
Licensed Asbestos Assessor	Survey, sampling, air monitoring, clearance
LASEPA	Compliance verification, environmental monitoring
FMEnv	Regulatory approval, hazardous waste oversight
CLO	Community communication, grievance handling
IESM	Independent monitoring & verification

10.0 Monitoring & Reporting

Monitoring Indicators:

- Number of ACM samples collected
- Air quality readings (fibers/ml)
- Number of workers trained
- Quantity of ACM removed
- Number of incidents reported
- Clearance certificate issued

Reporting Frequency:

- Daily contractor reports
- Weekly PIU updates
- Monthly reports to AfDB
- Final Asbestos Removal Completion Report

11.0 Budget Estimate (Indicative)

Item	**Cost (NGN)**
Asbestos Survey & Testing	2,500,000

Removal Contractor	6,000,000
PPE & Consumables	1,200,000
Air Monitoring	1,000,000
Transport & Disposal	1,500,000
Community Sensitization	300,000
Total	**12,500,000**

Appendix 7 -- Stakeholder Engagement Evidence Package

This Appendix provides full evidence of stakeholder engagement conducted between 24 February and 10 April 2026 across the four PHC sites. It includes:

- Attendance sheets (scanned copies)
- Contact lists
- Signatures
- Photographs (Plates)
- Concerns matrix with project responses
- Field sampling logs
- Laboratory certificates
- Site photographs (Plates 3.2–3.5)
- Statement of completeness

All evidence complies with FMEnv ESIA Act (1992), AfDB ISS (2024), and LASEPA requirements for free, prior, informed, and documented consultation.

STAKEHOLDERS ENGAGEMENT OF THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) OF LAGOS STATE HEALTHCARE TRANSFORMATIVE INITIATIVE PROJECT.

The Environmental Impact Assessment law requires that an Environmental Impact Assessment (EIA) be conducted to assess and evaluate the potential impact on the environment and affected communities. As part of the ESIA preparation meaningful consultation has to be carried out with all stakeholders. This engagement is an integral part of that stakeholder engagement designed to have your view on the proposed project.

Highlights of Stakeholders' Engagement

Item	Description

Place of Meeting	Akodo General Hospital, Ibeju Lekki
Date	April 2, 2026
Language of Communication	English and Yoruba
Purpose of Meeting	To inform the stakeholders on the proposed project, the timeline, the components and the need for the ESIA and seek their cooperation to ensure a smooth project execution. 1. PHC Agbowa 2. PHC Ejirin 3. General Hospital, Ibeju Lekki 4. PHC Orimedu, Etin Osa 5. PHC Solu Alade 6. PHC Magbon 7. PHC Idasho 8. PHC Idotun

Opening Remarks	First was the introduction of the Representatives of the Lagos State Government the project proponents, officials of the Federal Ministry of Environment (Representative of the Federal Minister of Environment, Controller of Environment, Lagos State), officials of the Lagos State Ministry of Environment (representative of the Commissioner of Environment) and the ESIA consultants (Multiple Development Services, MDS). The stakeholders who came from the selected Primary Health Care Centers (PHC) communities under the Ibeju Lekki zone also introduced themselves. The Senior Special Assistant to the Lagos State Commissioner of Health gave insight on the proposed project. He said it was conceptualised to uplift the level of health care delivery at various local level through improved and modernised facilities for the benefit of the people of Lagos State. He added that some present facilities would be renovated and made fit for effective delivery. Others will be outright construction of new structures equipped with modern facilities for optimal healthcare delivery. The structures will be modernised with good roofing, provision of solar power to ensure round the clock power supply, ambulances and paces for rest for the medical personnel. Attention has also been given to the issue of availability of drugs in sufficient quantities to ensure maximum delivery. He added that the project is being supported by African Development Bank (AfDB). The project has been designed with optimum quality in mind. A timeline has been given within which the project would be delivered, adding that the goal was the completion before the end of the tenure of the administration of the State. For the zone there are a total of eight (8) centers out of which 5 will be outright new construction while 3 will be rehabilitated. The representative of the Federal Minister of Environment stated that it was a regulatory requirement that project of the magnitude being proposed be made to comply with the ESIA Law in the country. Appropriate standards

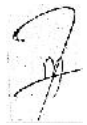
	must be applied in the project conceptualization and execution to ensure its success in terms safety and sustainability. The ESIA data collection exercise has to be monitored to ensure it complies with provided guidelines. The representative of the ESIA consultants, MDS stated the Scoping workshop was meant to inform and educate key stakeholders, the host communities including NGOs on the project design, the ESIA process and the need for stakeholders to cooperate and contribute to the project execution. He thereafter made a presentation on the project design including the various components, the ESIA process including data collection stages to ensure the document meets the required standards and the needed cooperation and contribution of stakeholders. He then appealed for maximum cooperation of the stakeholders in providing appropriate information for the success of the ESIA preparation. The stakeholders should feel free to offer their suggestions.
The Project: **The ESIA for Lagos State Health Facilities**	The ESIA process is aimed at ensuring that a project is planned, executed and operated in a sustainable manner meeting set objectives.
Main Objective	This is to ensure that everyone involved in the process is informed and has opportunity to contribute to its success through the application of sustainable principles
Need for Public Involvement	The ESIA is a regulatory requirement for projects of this magnitude to comply with provisions of the EIA act 2004 and ISS safeguard standards. The engagement of stakeholders is emphasised right through the project conception, execution and operation.

Stakeholders' Queries, concerns, General perception about the Project	The stakeholders while being grateful for the proposed projects that have been carefully conceptualized, drew attention to certain issues to be considered. These are: 1. Use of materials. They would prefer abvestos to aluminium for roofing. 2. They would like to know when the project will commence. 3. How will adequate manpower be assured in all the centres? Most of those presently in operation lack adequate staff. 4. There is a dispensary constructed in 1961 but has been abandoned. How will this project affect it? 5. How will power supply be guaranteed?
Stakeholders' Specific needs from the project	1. Adequate equipment for all the centres 2. Adequate manpower for all centres should be guaranteed. 3. Construction of boreholes for adequate water supply 4. Round the clock electricity for all general hospitals and PHCs. 5. Use asbestos roofing for those to be constructed.
Responses to Stakeholders' Needs, concerns/How addressed by the project (Design/Operation)	The representatives of the project proponent and the ESIA consultants responded respectively to the queries and the demands of the stakeholders as follow: 1. Adequate plan has been made by the present Lagos State Government to ensure that the proposed structures are

	of best quality, meeting international standards. The project is being supported by AfDB. 2. Ther will be adequate power supply as there are provisions of Solar power. 3. There will be adequate accommodation for the medical personnel especially the doctors to ensure their availability for 24 hours, though their apartment will not built separately. 4. The prototype design is such that all structures will be built with high quality materials with adequate convenience for users. 5. On the issue of the demand for asbestos for the roofing, the stakeholders were informed of the hazards associated with it which has led to the ban internationally.

(Please, note as you write the table expands and use additional sheet where Necessary. Remember to include pictures that are Apt.)





Francisca Okwuosa (Mrs)	Dr. Ayodotun Bobadoye	Chidiebere Emmanuel
Rep. of Minister, FMEnv	Special Asst. To Commissioner for Health	Head, MDS Team
Name/Sign/Date	Name/Sign/Date	Name/Sign/Date
Tel. No.	Tel. No.	Tel. No.

Appendix 8: Attendance Sheet



ATTENDANCE SHEET FOR THE LAGOS STATE HEALTHCARE TRANSFORMATIVE INITIATIVES PROJECT

CLUSTER Ibeju Lekki SITE/VENUE Akodo General Hospital DATE 02/01/2026

EVENT Scoping Workshop

S/N	NAME	POSITION	COMMUNITY	PHONE NO	EMAIL	SIGNATURE
1	Yusuf Sekinat	Member	Orimedu	07019635519	162 email Yusuf Sek	
2	Sherifu Olawoyega	Member	Orimedu III	0805538685		
3	Bolaguan Kafayat	Vice Chairman	Orimedu	08083145030		
4	Olawoyega Muniru	Secretary	Orimedu	07046726572		
5	Tijani Akinpelu	Chairman	Orimedu III	08102518640		
6	OBEMBE BORCAS	Officer in Charge	ORIMEDU III	07037406408		
7	OSIYEMI KAFAYAT	Women Leader	ETU	08039090497		
8	Bolanle Ditun	MCH	MCH	09121551172		
9	Olumuyiwa Balogun	MCH	MCH	08068088792		
10	Adejumo O O	Facility	FMC Ayetoro	09083234026		
11	Christiana Emmanuel	Consultant	MDS	07036941235		
12	Thomas Romeo Oc	Registrar	FMC Ayetoro	08035593593		
13	Tunde Taiwo		MDL	07061552		
14	Titilayo Olowofoni	Consultant	MDS	08163145788		
15	Taiwo Ajomakin T		MDS	08166630904		
16	TEMITOPE ADEWUNMI	ANESTHETIC NURSE	CRIMEDU I	09115410796		
17	Ayuba Olawuyi	Consultant	MDS	08033878198		
18	Victor Akinpelu	Consultant	MDS	08035277315		

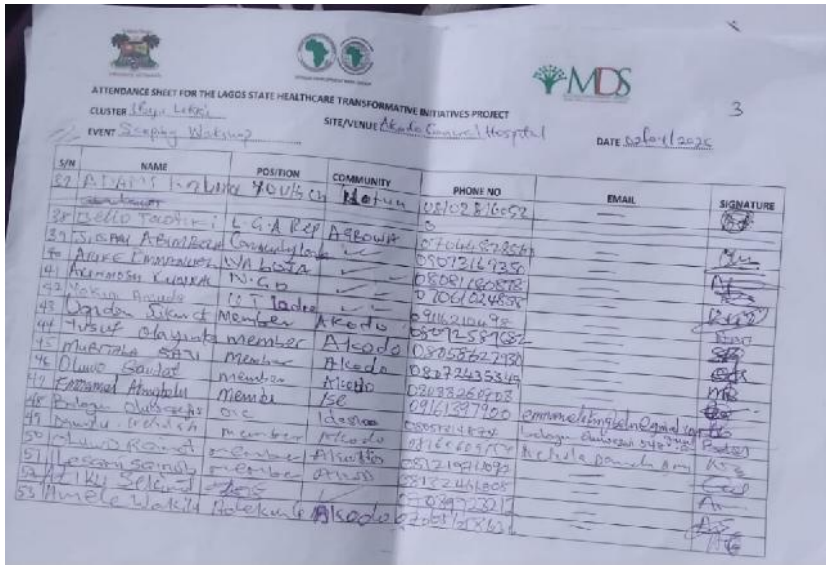


ATTENDANCE SHEET FOR THE LAGOS STATE HEALTHCARE TRANSFORMATIVE INITIATIVES PROJECT

CLUSTER Ibeju Lekki SITE/VENUE Akodo General Hospital DATE 02/01/2026

EVENT Scoping Workshop

S/N	NAME	POSITION	COMMUNITY	PHONE NO	EMAIL	SIGNATURE
19	Abdul-Azeez Folorunsho	DIC	Egbeda	07031955661		
20	Balogun Tajudeen B	Community Liaison	Egbeda	07057235584		
21	Shakirat Modupe	Member	Solu-elado	08112343831		
22	Semiu olawoyega	Secretary	Solu-elado	07046726572		
23	ALIU Shakirat	Member	Solu-elado	07037406408		
24	Bolaji Adewale	Religious Member	Solu-elado	08034209963		
25	OMOTOSE Ibrahim	Member	OKUN	09026359721		
26	OLAGA James	Member	Akodo	07062170534	Ilomade91@gmail.com	
27	Moshood Afeez	Youth Society	Solu-Alode	08160760671		
28	Dr. Adebola B.C	MOH	IBEJU LEKKI	08095492704		
29	Adelaja Olawale	Member	Orimedu III	08050352694		
30	Alaga Adebanjo	Ladari	Akodo	07087116692		
31	Ajana Saheed	CDA chairman	Lelado	08141174989		
32	Ilori Bolanle	Orimedu	Orimedu	08058554896		
33	Chief Nwondeenpa	Chief	Adejuwa	08088945151		
34	Chief Olaniyi Lawal	Baale	Idetun	08057111826		
35	Olanrewaju Adejoke	Market Woman	Idetun	07038674402		
36	Segun Akaje	Member	Akodo	08054665247		



ATTENDANCE SHEET FOR THE LAGOS STATE HEALTHCARE TRANSFORMATIVE INITIATIVES PROJECT

CLUSTER Ibeju Lekki SITE/VENUE Akodo General Hospital DATE 02/04/2025

EVENT Scoping Workshop

3

S/N	NAME	POSITION	COMMUNITY	PHONE NO	EMAIL	SIGNATURE
37	[illegible]	[illegible]	[illegible]	[illegible]		
38	Bello Taofik	L.G.A Rep	Agbowa	[illegible]		
39	Sigbal Abimbola	Community leader	[illegible]	[illegible]		
40	Abike Emmanuel	LVA bista	[illegible]	[illegible]		
41	Akinnusi Kunle	N.G.O	[illegible]	[illegible]		
42	[illegible]	[illegible]	[illegible]	[illegible]		
43	Ogidan Sikiru	Member	Akodo	[illegible]		
44	Yusuf Olayinka	member	Akodo	[illegible]		
45	Muritala Sani	Member	Akodo	[illegible]		
46	Oluwo Gaulat	Member	Akodo	[illegible]		
47	Emmanuel Akinbobi	Member	Akodo	[illegible]		
48	Balogun Olubunmi	DEC	Idasho	[illegible]		
49	Bamidele Rebecca	member	Akodo	[illegible]		
50	Oluwo Raouf	member	Akodo	[illegible]		
51	Lasisi Saheed	member	Akodo	[illegible]		
52	Alli Sikiru	Member	Akodo	[illegible]		
53	Munele Wakili	Member	Akodo	[illegible]		



ATTENDANCE SHEET FOR THE LAGOS STATE HEALTHCARE TRANSFORMATIVE INITIATIVES PROJECT

CLUSTER Ibeju Lekki SITE/VENUE Akodo General Hospital DATE 02/04/2025

EVENT Scoping Workshop

4

S/N	NAME	POSITION	COMMUNITY	PHONE NO	EMAIL	SIGNATURE
54	Raji Samuel	Mejor	Akodo	08128691699		
55	Folake Abraham	Iya Ijo	Idasho	09077986097		
56	Michael Ayo. B	CHIEF	Akodo	07058501908		
57	DR Muibat	Deputy MD	Akodo	08164559849		
58	Hassan Nureni	PALACE Akodo	Akodo	08032721678		
59	Ibrahim Abeeb	Youth secretary	Akodo Town	08134830093		
60	Oluwaniyi Stephen	Comm. secretary	Idasho	08074252692		
61	[illegible]	[illegible]	[illegible]	[illegible]		
62	Jacob T Jand	Officer In charge	Akodo PHC	08052796926		
63	Afekomogan Sunday	Akodo youth leader	Akodo	07031910302		
64	Tuesani Saheb	Weber	Akodo	08132466808		

Appendix 9: Pictures of Stakeholders Engagement

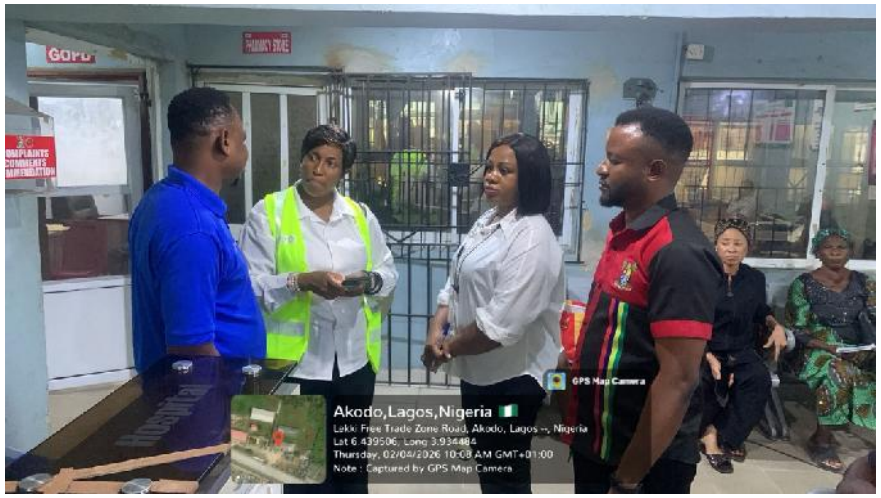









GPS Map Camera
Akodo,Lagos,Nigeria
Lekki Free Trade Zone Road, Akodo, Lagos --, Nigeria
Lat 6.439101, Long 3.934631
Thursday, 02/04/2026 10:24 AM GMT+01:00
Note : Captured by GPS Map Camera


GPS Map Camera
Akodo,Lagos,Nigeria
Lekki Free Trade Zone Road, Akodo, Lagos --, Nigeria
Lat 6.439506, Long 3.934484
Thursday, 02/04/2026 10:08 AM GMT+01:00
Note : Captured by GPS Map Camera


GPS Map Camera
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Lekki Free Trade Zone Road, Akodo, Lagos --, Nigeria
Lat 6.439179, Long 3.934607
Thursday, 02/04/2026 10:43 AM GMT+01:00
Note : Captured by GPS Map Camera


GPS Map Camera
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Lekki Free Trade Zone Road, Akodo, Lagos --, Nigeria
Lat 6.439138, Long 3.934625
Thursday, 02/04/2026 10:53 AM GMT+01:00
Note : Captured by GPS Map Camera

Appendix 10: FMEnv Field Attestation Register

Project: Lagos State Health Infrastructure Project (LSHIP) – Ibeju Lekki (Group 5)

Dates of Field Work: 1-10 April 2026

Purpose: To document the participation and oversight of Federal Ministry of Environment (FMEnv) officials during the field data gathering and stakeholder engagement activities.

Attesting Officials: see attached below:

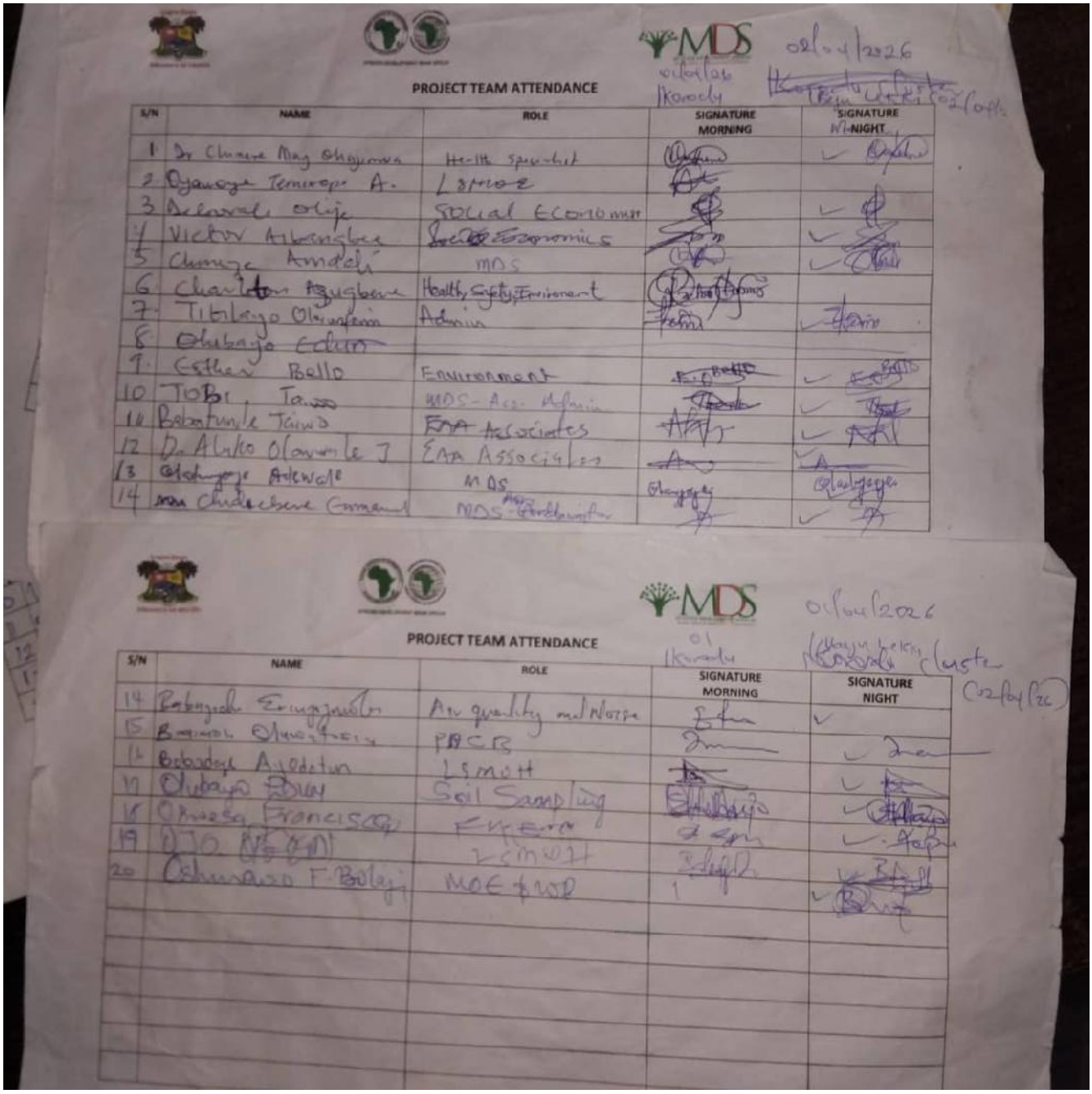
S/N	Name	Position	Signature	Date
1	Okwesa Francesca	FMEnv., Abuja		
2	Adenaike Olubunmi	FMEnv Lagos Office, (Zonal Director)		
3	Oshimowo T. Bolaji	Lagos State Ministry of Environment & Water Resources		
4	Oyawoye Anuoluwa	Lagos State Ministry of Environment & Water Resources		
5	Shittaboy Tolulope	FMEnv, Zonal Office Lagos		
6	Kehinde Biok T	FMEnv, Zonal Office Lagos		
7	Eberechukwu E.U	FMEnv, Zonal Office Lagos		
8	Engr. Braimoh	Lagos State Primary Healthcare Board		

Project Proponent / Consultant Signatories:

Name	Position	Signature	Date
[Name]	ESIA Lead Consultant, MDS		
[Name]	Project Manager, PIU		

Declaration: The undersigned confirm that the field data gathering and stakeholder engagement activities for the ESIA were conducted in accordance with FMEnv guidelines and AfDB ISS requirements.

Position	Signature	Date
ESIA Lead Consultant		
FMEnv Representative (Abuja)		
FMEnv Representative (Lagos Zonal Office)		
PIU Project Manager		



PROJECT TEAM ATTENDANCE

S/N	NAME	ROLE	SIGNATURE MORNING	SIGNATURE NIGHT
1	Dr Chinere May Ohagwuwa	Health Specialist		
2	Oyawoye Temitope A.	Lawyer		
3	Achonwa Olije	Social Economist		
4	Victor Akhenglbee	Social Economics		
5	Chinaza Amadi	MDS		
6	Charlton Agugbeme	Health, Safety, Environment		
7	Titilayo Olawuyemi	Admin		
8	Olubayo Edun			
9	Esther Bello	Environment		
10	TiOBi Ta...	MDS - Acc. Admin		
11	Babatunde Taiwo	EAA Associates		
12	Dr Aluko Olawunmi J	EAA Associates		
13	Olabanjo Adewale	MDS		
14	Chidiebere Emmanuel	MDS Environmentalist		

PROJECT TEAM ATTENDANCE

S/N	NAME	ROLE	SIGNATURE MORNING	SIGNATURE NIGHT
14	Babayode Emmanuel	Air quality and Noise		
15	Bamidele Oluwafemi	PACES		
16	Babadeye Ayodeji	Lsmott		
17	Olubayo Edun	Soil Sampling		
18	Okwesa Francisca	Energy		
19	[illegible]	Lsmott		
20	Oduwaiye F. Bolaji	MOE&UD		

Appendix 11: Traffic Management Plan (TMP)

A. Purpose

This Traffic Management Plan (TMP) ensures safe movement of vehicles, workers, and community members during construction of the four PHC facilities in the Group 5 Ibeju-Lekki Axis.

B. Traffic Impact by Site

Site	Baseline Traffic (AADT)	Construction Traffic (Peak)	Risk Level
Agbowa	500-1,000	10-20 vehicle trips/day	Medium-High
SoluAlade	2,000-5,000	10-20 vehicle trips/day	Medium-High
Ejirin	<500	5-10 vehicle trips/day	Low-Medium
Orimedu	<500	5-10 vehicle trips/day	Low-Medium

C. Mitigation Measures

1. Delivery Scheduling:

- Deliver materials 9:00-16:00 (avoid peak hours 7:00-9:00, 17:00-19:00)
- Schedule concrete pours during low-traffic periods
- Coordinate with local authorities on road closures

2. Signage and Communication:

- Install warning signs 200m from construction entrances
- Post speed limit signs (30 km/h zones)
- Display construction schedule notices in communities
- Use variable message boards where feasible

3. Traffic Control:

- Deploy trained traffic marshals at site entrances
- Use stop/go paddles or portable traffic lights where needed
- Maintain clear sightlines at entry/exit points
- Provide safe crossing points for pedestrians

4. Access Management:

- Maintain access to all homes and businesses
- Provide alternative routes where roads are closed

- Ensure emergency vehicle access maintained
- Install temporary footpaths where pedestrian access is disrupted

5. Worker Transport:

- Provide designated parking for worker vehicles
- Encourage carpooling and shuttle services
- Separate worker vehicle entry from material delivery routes
- No parking on public roads

6. Emergency Access:

- Maintain clear access for ambulances and fire trucks
- Designate emergency access route with signage
- Provide site layout maps to emergency services
- Train security personnel on emergency access procedures

D. Monitoring

Indicator	Target	Frequency	Responsible
Traffic incidents	Zero	Daily	Site Supervisor
Signage compliance	100%	Weekly	HSE Officer
Speed limit compliance	100%	Weekly	Security
Community complaints	Resolve ≤14 days	Ongoing	CLO
Emergency access	Maintained	Daily	Site Supervisor

E. Contact List for Traffic Management

Role	Name	Phone Number
Site Traffic Marshal (Agbowa)	[Name]	[Phone]
Site Traffic Marshal (SoluAlade)	[Name]	[Phone]
Traffic Marshal (Orimedu)	[Name]	[Phone]
Traffic Marshal (Ejirin)	[Name]	[Phone]
Ibeju-Lekki LGA Traffic Department	[Name]	[Phone]
LASEMA Emergency	-	112

Appendix 12: Laboratory QA/QC Documentation

12A: Chain-of-Custody Forms (Completed forms for all samples)

12B: Laboratory Accreditation Certificate (FMEnv Certificate No. FMEnv/LAB/014)

12C: Equipment Calibration Certificates

- Aeroqual Series 500 (Calibration date: 20-22 February 2026)
- Extech 407780 Sound Level Meter (Calibration date: 22 February 2026)
- Kestrel 5500 Weather Meter (Calibration date: 20 February 2026)
- PCSTestr 35 Multi-parameter Meter (Calibration date: 22 February 2026)
- GPS Handheld Units (Calibration date: 23 February 2026)

12D: Analytical Plot-Outs and Laboratory Reports

- Air quality chromatograms and spectra
- Water quality analytical sheets
- Soil quality analytical sheets
- Microbiological culture plates (photographs)

12E: Laboratory Attestation Form (Signed by Bato Chemical Laboratories Limited)

12F: Field Attestation Register (Signed by FMEnv officials - also provided as Appendix 8)

Appendix 13 – Code of Conduct for Gender-Based Violence (Full Text)

LAGOS HEALTHCARE TRANSFORMATIVE INITIATIVE PROJECT (LHTIP) CODE OF CONDUCT FOR WORKERS BADAGRY AXIS FACILITIES

I, the undersigned, acknowledge that I am working on the LHTIP Badagry Axis facilities, which is financed by the African Development Bank (AfDB) and implemented by the Lagos State Ministry of Health (LSMoH). I understand that GBV/SEA/SH is strictly prohibited, and violations will result in serious consequences, including termination and legal prosecution.

I AGREE TO THE FOLLOWING:

1. Professional Conduct

- I will treat all community members, colleagues, and supervisors with respect and dignity.
- I will follow all safety rules and wear required PPE at all times.
- I will report any safety hazards, incidents, or GBV/SEA/SH concerns to my supervisor or the GRM.

2. Prohibited Behaviours (Zero Tolerance)

- No sexual harassment – I will not make unwelcome sexual advances, comments (jokes, whistling, catcalling), gestures, or physical contact.
- No sexual exploitation or abuse – I will not exchange money, goods, jobs, or any form of payment or favour for sex.
- No sexual activity with minors – I understand that any sexual activity with a person under 18 years of age is prohibited and is a criminal offence (statutory rape) under Nigerian law, regardless of consent.
- No forced or coerced sexual activity – I will not use force, threats, intimidation, or coercion to obtain sex.
- No intimate relationships with community members (where there is a power imbalance – e.g., supervisor with community woman seeking employment). Consensual relationships in the workplace (between peers) are permitted but must be disclosed to avoid conflict of interest.
- No fighting, intimidation, violence, or threats of violence against any person.
- No alcohol or drug use on site or during working hours (including lunch breaks). Alcohol or drug use that impairs judgment and leads to GBV is prohibited.

- No discrimination based on gender, ethnicity, religion, disability, HIV status, pregnancy, marital status, age, or political opinion.
- No bullying – I will not engage in physical, verbal, or psychological bullying.

3. Community Interaction

- I will not enter community members' homes without permission.
- I will not photograph or film community members (especially women and girls) without their explicit consent.
- I will not loiter around schools, markets, or other places where women and girls gather.
- I will respect local customs and traditions (e.g., dress modestly, avoid public displays of affection).

4. Reporting Obligations

- I will report any GBV/SEA/SH incident that I witness or become aware of (by another worker or community member) to the GRM (hotline, suggestion box, female focal point, or my supervisor).
- I understand that failure to report a known incident may result in disciplinary action.

5. Sanctions for Violations

I understand that violations of this Code of Conduct will result in sanctions, up to and including:

- Verbal warning (minor, first-time violation)
- Written warning (repeat minor violation)
- Suspension (serious violation – e.g., sexual harassment)
- Termination (gross violation – e.g., sexual exploitation or abuse, sexual activity with minor)
- Legal prosecution (criminal offences – e.g., rape, sexual activity with minor, assault)

6. Survivor-Centered Response

I understand that any survivor of GBV/SEA/SH has the right to:

- Confidentiality (their name will not be disclosed without consent)
- Safety (no retaliation)
- Respect (no victim-blaming, no judgment)
- Access to medical, psychosocial, legal, and shelter services (referral pathway)
- No requirement to report to police (if they choose not to)

7. Acknowledgment

I have read (or had read to me) and understood this Code of Conduct. I agree to abide by it. I understand that violation may result in termination and legal prosecution.

Field	Information
Full Name (print)	_____
Signature	_____
Date	_____
Position	_____
Employer (Contractor)	_____
Witness (name, signature)	_____

Distribution: Original to worker, copy to Contractor E&S Officer, copy to PIU.

Appendix 14 – General Environmental Management Conditions for Construction Contracts

General Environmental Management Conditions by Project Phase

Phase	Environmental Aspect	Management Condition / Requirement	Responsible Party	Compliance Reference
Pre-construction				
Pre-construction	Environmental Permits	Obtain all necessary permits from LASEPA, NESREA (an agency under FMEnv), and Lagos State Physical Planning Permit Authority before mobilisation.	Contractor	LASEPA Regulations 2021; FMEnv EIA Guidelines
	Environmental Impact Assessment (EIA)	For projects meeting EIA thresholds, submit an Environmental Impact Assessment report to FMEnv's EIA Department for review and approval before construction begins.	Contractor	FMEnv EIA Act Cap E12 LFN 2004

	Environmental Management Plan (EMP)	Submit a site-specific EMP for each PHC cluster or for all 29 centres, covering waste, dust, noise, water, and spills. The EMP shall be reviewed in line with FMEnv's Environmental Assessment (EA) reporting guidelines.	Contractor	Contract Clause 2.2; FMEnv EA Guidelines
	Baseline Survey	Conduct a baseline environmental survey (noise, air quality, and existing waste) at each PHC location before works begin.	Contractor / Consultant	IFC EHS Guidelines; FMEnv Standards
	Community Engagement	Notify neighbouring communities and PHC staff of construction schedule, duration, and	Contractor / Employer	Lagos State Environmental Noise Regulations

		potential nuisances.		
	Waste Management Plan	Submit a waste management plan identifying approved disposal sites for inert, non-hazardous, and hazardous waste.	Contractor	NESREA (FMEnv) Regulations
	Spill Response Plan	Submit a site-specific spill prevention and response plan, including inventory of fuel/chemicals to be stored.	Contractor	NESREA (Chemical Mgmt) Regulations
	Training Plan	Submit an environmental induction training plan for all site personnel.	Contractor	Contract Clause 2.4
	Grievance Mechanism	Establish and publicise a community grievance mechanism (phone number, logbook) before mobilisation.	Contractor	World Bank ESF / Good Practice

Construction				
Construction	Dust Control	Spray water on exposed soils and unpaved access roads at least twice daily during dry season; cover stockpiles.	Contractor	LASEPA Air Quality Guidelines; FMEnv National Air Quality Standards
	Noise Control	Restrict loud works to 7:00 AM – 6:00 PM; use silenced equipment; notify community before high-noise activities. Monitor noise levels to comply with LASEPA and FMEnv standards.	Contractor	LASEPA Noise Regulations; FMEnv Noise Standards
	Water Protection	No discharge of concrete slurry, fuel, or untreated wastewater into drains or water bodies.	Contractor	National Water Resources Regulations; FMEnv Water Quality Guidelines
	Solid Waste Management	Segregate waste at source: inert (blocks,	Contractor	NESREA (Solid Waste) Regulations;

		concrete), recyclable (metal, plastic), and general waste; dispose only at LASEPA-approved sites. FMEnv's National Plastic Waste Recycling Programme guidelines shall be followed for plastic waste.		FMEnv Plastic Waste Policy
	Hazardous Waste Management	Store used oil, paint thinners, and chemical containers in sealed, bunded, labelled containers; dispose via NESREA-licensed contractor.	Contractor	NESREA (Hazardous Waste) Regulations
	Spill Response	Maintain spill response kit on site; report any spill ≥5 litres to Engineer within 2 hours. Major spills shall also	Contractor	Contract Clause 3.5; NESREA Regulations

		be reported to FMEnv through NESREA .		
	Topsoil Management	Strip and stockpile topsoil separately for later landscaping; protect stockpiles with silt fences.	Contractor	FMEnv Land Degradation Guidelines
	Tree / Vegetation Protection	Do not clear trees ≥30 cm diameter without Engineer's approval; demarcate clearing limits.	Contractor	Lagos State Tree Preservation Regulations; FMEnv Forestry Guidelines
	Sanitation	Provide adequate toilets (1 per 15 workers) and covered bins for domestic waste from worker camps.	Contractor	Public Health Law
	Medical Waste (Refurbishment)	Do not handle existing medical waste; notify Employer for removal by authorised	Contractor / Employer	NESREA (Medical Waste) Regulations (FMEnv)

		medical waste contractor before refurbishment begins.		
	Community Safety	Fence deep excavations; lock hazardous material storage areas; maintain access to active PHC entrances.	Contractor	Contract Clause 4.3
	Traffic Management	Provide flagmen and signage at PHC access points; avoid haulage through narrow residential streets where possible.	Contractor	Lagos State Traffic Regulations
	Environmental Reporting	Submit monthly EMP implementation report, waste tracking log, and grievance log to Engineer. Copies shall be retained for potential FMEnv audit.	Contractor	Contract Clause 5; FMEnv EAR Guidelines
Operational				

Operational	Environmental Audit	Within 12 months of handover, the Employer shall conduct a post-construction Environmental Audit Report (EAR) and submit to FMEnv's EIA Department if required by permit conditions.	Employer	FMEnv Environmental Audit Guidelines
	Waste Management (PHC Operations)	After handover, the PHC operator shall segregate general waste from infectious medical waste and use NESREA-licensed medical waste disposal contractors.	Employer / PHC Operator	NESREA (Medical Waste) Regulations (FMEnv)
	Wastewater Management	Ensure that any new or refurbished PHC has functional septic tank / soakaway	Employer	Lagos State Water Regulations; FMEnv Water Quality Standards

		system or connection to public sewer.		
	Air Quality (Generator)	Standby generators shall be serviced regularly; located away from patient and community areas; exhaust directed upward. Emissions shall comply with FMEnv National Air Quality Standards.	Employer	LASEPA Air Quality Guidelines; FMEnv Air Quality Standards
	Noise (Generator / Equipment)	Generator sets shall be acoustically enclosed or placed in soundproofed rooms; noise not to exceed 55 dB(A) at night at nearest residence.	Employer	LASEPA Noise Regulations; FMEnv Noise Standards
	Hazardous / Pharmaceutical Waste	Expired drugs and pharmaceutical waste shall be stored separately	PHC Operator	NESREA (Pharmaceutical Waste) Regulations (FMEnv)

		and incinerated or disposed of by a NESREA-licensed contractor.		
	Community Relations	Maintain a grievance log for community complaints about PHC operations (noise, odour, waste).	PHC Operator	LASEPA Guidelines
Decommissioning				
Decommissioning	Decommissioning Plan	If any PHC is decommissioned in the future, a site-specific decommissioning plan shall be submitted to LASEPA and FMEnv (through NESREA) 60 days prior to works.	Future Contractor / Employer	NESREA (Decommissioning) Regulations; FMEnv Guidelines
	Hazardous Materials Inventory	Before demolition, survey for asbestos, lead paint, mercury (from old thermometers),	Future Contractor	IFC EHS Guidelines; NESREA Regulations

		and other hazardous materials.		
	Asbestos Handling	If asbestos-containing materials are found, engage a NESREA-licensed asbestos contractor for removal and disposal.	Future Contractor	NESREA (Asbestos) Regulations (FMEnv)
	Demolition Waste	Concrete, blocks, and steel shall be segregated; inert waste sent to recycling facility or LASEPA-approved landfill.	Future Contractor	NESREA (Solid Waste) Regulations
	Hazardous Waste Disposal	All hazardous waste (oils, chemicals, pharmaceuticals) shall be disposed of through a NESREA-licensed hazardous waste	Future Contractor	NESREA (Hazardous Waste) Regulations

		contractor with manifests.		
	Site Restoration	Remove all foundations, floors, and underground tanks (if any); backfill and revegetate or pave as required by land use plan.	Future Contractor	FMEnv Land Restoration Guidelines
	Final Environmental Report	Submit a closure report to LASEPA, FMEnv (through NESREA), and the Employer including waste manifests, soil test results (if contamination suspected), and confirmation of restoration.	Future Contractor	LASEPA Regulations; FMEnv Closure Reporting Guidelines

Appendix 15 – Socio-Economic Data Collection Instruments

SOCIO-ECONOMIC SURVEY QUESTIONNAIRE

Environmental and Social Impact Assessment (ESIA) – Health Facilities, Lagos State

SECTION A: IDENTIFICATION AND LOCATION (Baseline Data)

Questionnaire ID: _____ Date: _____

Enumerator Name: _____

LGA: _____

Ward/Community: _____

Street/Area Name: _____

GPS Coordinates: _____ _____

Settlement Type:

Urban Formal _____

Urban Informal (Slum) _____

Peri-Urban _____

SECTION B: RESPONDENT DEMOGRAPHICS

Gender: Male : _____ Female _____

Age: _____

Marital Status: Single [ ] Married [ ] Widowed [ ] Divorced [ ]

Education Level:

None [ ] Primary [ ] Secondary [ ] Tertiary [ ] Vocational [ ]

Occupation: _____

Length of Stay in Community: <1 year [ ] 1–5 years [ ] >5 years [ ]

SECTION C: HOUSEHOLD SOCIO-ECONOMIC PROFILE (ESS1)

Household Size: _____

Vulnerable Members (tick all that apply):

Children under 5 [ ]

Elderly (60+) [ ]

Persons with Disabilities [ ]

Pregnant/Nursing Mothers - [ ]

Chronically iIl … [ ]

Housing Type:

Permanent -- [ ]

Semi-permanent -- [ ]-

Temporary -- [ ]

Tenure Status:

Owner [ ]

Tenant - [ ]-

Informal/No Title [ ]

Monthly Household Income (₦):

<50,000 ---------- [ ]

50,000–100,000 ---------- [ ]

100,000–200,000 ---------- [ ]-

>200,000 ---------- [ ]

SECTION D: ACCESS TO BASIC SERVICES (ESS1 & ESS4)

ServiceMain Source	Reliability (Good	Fair	Poor
Drinking Water			
Electricity			
Sanitation			
Waste Disposal			

SECTION E: HEALTHCARE ACCESS & UTILIZATION (ESS1 & ESS4)

Nearest Health Facility: Distance: <1 km [ ] 1–5 km [ ] >5 km [ ]

Primary Health Facility Used:

Public ---------- [ ]

Private---------- [ ]

Pharmacy/Chemist ------[ ] -

Traditional [ ]

Average Travel Time to Facility:

<15 mins [ ] 15–30 mins: [ ] , 30–60 mins: -[ ] -, >1 hour: [ ]

Mode of Transport:

Walking……..[ ]

Okada……[ ]

Keke …….[ ]

Bus…….[ ]

Private Car……. [ ]

Key Barriers to Access (tick all):

Cost ……..[ ]

Distance……[ ]

Traffic congestion…….[ ]

Poor road condition……..[ ]

Safety concerns……..[ ]

Facility overcrowding ….[ ]

Average Monthly Health Expenditure (₦): _____

SECTION F: TRAFFIC AND ACCESS CONSTRAINTS

Community Health & Safety)

What is the road condition leading to the nearest health facility?

Good (paved, motorable year-round) [ ]

Fair ……[ ]

Poor (frequent flooding, potholes, inaccessible)….[ ]

Do you experience traffic congestion when accessing healthcare?

Yes (Severe)

Yes (Moderate)

No ( )

Average delay due to traffic:

<15 mins ----------[ ]

15–30 mins ---------[ ] -

30–60 mins ---------[ ]

>1 hour ----------[ ] ----

Are there transport safety risks?

Road accidents ----------[ ]

Reckless driving----------[ ]

Lack of pedestrian walkways --[ ]

Poor street lighting ----------[ ]

Security risks ----------[ ]

Emergency access:

Can ambulances reach your area easily?

Yes ----------[ ]

No ----------[ ]

Sometimes ------[ ]

Key access challenges (open-ended):

SECTION G: COMMUNITY HEALTH AND SAFETY RISKS

Common environmental/public health risks (Tick all that apply):

Flooding ----------[ ]

Poor drainage ----------[ ]

Waste accumulation ……[ ]

Air pollution ……[ ] .

Noise ……[ ] .

Have you experienced any of the following?

Disease outbreaks ----------[ ]

Industrial pollution ----------[ ] ----

Traffic accidents ----------

Perceived risks from proposed health facility:

Increased traffic ----------[ ]

Noise ----------[ ]

Medical waste ----------[ ]

Influx of people----------[ ]

SECTION H: STAKEHOLDER ENGAGEMENT & AWARENESS

Awareness of Project:

Yes ----------[ ]

No ----------[ ]

Source of Information:

Community leaders ----[ ]

Government -------[ ]

Media ----------[ ] -

Others (Specify) ----------

Have you been consulted?

Yes ----------[ ]

No ----------[ ]

Preferred engagement method:

Town hall meetings --------[ ]

Focus group discussions ( )

SMS/Phone ( )

Social media ( )

SECTION I: PROJECT PERCEPTION

Do you support the project?

Yes ( )

No ( )

Undecided ( )

Expected Benefits:

Improved access ( )

Employment ( )

Reduced travel time ( )

Better emergency response ( )

Key Concerns:

Land acquisition ( )

Traffic congestion ( )

Noise ( )

Waste management ( )

SECTION J: GRIEVANCE REDRESS MECHANISM

Awareness of grievance channels:

Yes ( )

No ( )

Preferred reporting channel:

Community leader ( )

Phone hotline ( )

Health facility desk ( )

Suggestion box ( )

Online ( )

Willingness to use GRM:

Yes ( )

No ( )

SECTION K: VULNERABLE GROUPS & INCLUSION

Do vulnerable groups face barriers to healthcare?

Yes ( )

No ( )

Type of barriers:

Cost ( )

Mobility constraints ( )

Discrimination ( )

Cultural factors ( )

SECTION L: SUGGESTIONS & MITIGATION MEASURES

Suggested improvements for health facility planning:……
……
……..

Measures to reduce traffic/access challenges:……
……
……..
Measures to enhance community safety:……
……
……

SECTION M: INFORMED CONSENT

Participation is voluntary and confidential

Do you consent?

Yes ( )
No ( )

Signature/Thumbprint: _____

FOCUS GROUP DISCUSSION (FGD) GUIDE

Lagos State Health Facilities Upgrade/Development Project (ESIA)

1. FGD SETTING

1.1 Venue Selection

FGDs should be conducted in:

Neutral, safe, and accessible locations within the community (e.g., community halls, health facilities, schools, religious centres)
Locations convenient to participants (markets for traders, waterfront spaces for riverine communities, etc.)
Quiet environments with minimal disruption

1.2 Group Composition

Each FGD should consist of:

- 8–12 participants (optimal for effective interaction)
- Homogeneous groups to encourage free discussion:
- Women (especially caregivers and traders)
- Youth (male/female groups where necessary)
- Elderly persons
- Persons with Disabilities (PWDs)
- Urban poor/informal settlement residents
- Riverine communities

1.3 Language

Conduct discussions in:

- English
- Yoruba
- Nigerian Pidgin
- Use interpreters where necessary

1.4 Duration

- 15–20 minutes per session

1.5 Materials

- FGD guide (this document)
- Notepads and pens
- Audio recorder (with consent)
- Attendance register
- Consent forms

1.6 Facilitation Team

- Lead facilitator (moderator)
- Note-taker/rapporteur

- Community mobilizer (where needed)

2. FGD STRUCTURE

2.1 Introduction (2–5 minutes)

Facilitator should:

- Introduce the team and purpose of the discussion
- Explain the ESIA and project in simple terms
- Assure participants of:
- Confidentiality
- Voluntary participation
- No right or wrong answers
- Obtain informed consent
- Set ground rules:
- Respect for all opinions
- One person speaks at a time
- No interruptions

2.2 Icebreaker Session (2 minutes)

- Ask participants to briefly introduce themselves:
- Name (optional)
- Occupation
- Length of stay in community

2.3 Core Discussion (10– 15 minutes)

(Organized into thematic areas aligned with ESF)

2.4 Wrap-Up and Closing (3 minutes)

- Summarize key points
- Ask if anything was missed
- Provide information on grievance channels
- Thank participants

3. TYPES OF QUESTIONS

Questions should be open-ended, probing, and participatory, grouped into thematic areas:

3.1 COMMUNITY PROFILE & LIVELIHOODS (ESS1)

- Can you describe this community and how long people have lived here?
- What are the main occupations of people here?
- Are there differences in income levels across the community?
- Are there particular groups considered vulnerable? Why?

Probes:

- Migrants?
- Slum dwellers?
- Female-headed households?

3.2 HEALTH-SEEKING BEHAVIOR

- Where do people usually go when they are sick?
- What influences your choice of health facility (public/private/traditional)?
- Are there differences in health-seeking behavior among men, women, and youth?

Probes:

- Cost
- Distance
- Waiting time
- Quality of care

3.3 ACCESS TO HEALTHCARE SERVICES (ESS4)

- What challenges do you face in accessing healthcare facilities?
- How far is the nearest health facility?
- How does traffic or transportation affect access to care?
- Are services affordable?

Lagos-Specific Probes:

- Traffic congestion
- Flooding during rainy season
- Overcrowding in hospitals
- Availability of drugs

3.4 MATERNAL AND CHILD HEALTH (for women groups)

- What challenges do women face during pregnancy and childbirth?
- Do women prefer public or private facilities? Why?
- Are there cultural or financial barriers?

3.5 YOUTH AND ADOLESCENT HEALTH

- What are the common health issues affecting young people here?
- Do youth have access to reproductive health services?
- Are there barriers (stigma, cost, lack of information)?

3.6 VULNERABILITY AND SOCIAL INCLUSION (ESS1 & ESS10)

- Which groups in this community face the most difficulty accessing healthcare?
- How do persons with disabilities access health services?
- Are migrants or informal settlers treated differently?

3.7 PERCEPTION OF EXISTING HEALTH FACILITIES

- What do you think about the current health facilities?
- What are the major problems with these facilities?

Probes:

- Staff attitude
- Waiting time
- Equipment availability
- Cleanliness
- Power/water supply

3.8 PROJECT AWARENESS AND PERCEPTION (ESS10)

- Are you aware of the proposed health facility upgrade/development project?
- What are your expectations from this project?
- What benefits do you think it will bring?

3.9 POTENTIAL IMPACTS OF THE PROJECT

- Positive Impacts
- How will improved health facilities benefit you?
- Negative Impacts
- Are there any concerns about the project?

Probes:

- Construction disturbances (noise, dust)
- Traffic disruptions
- Safety risks
- Increased cost of services

3.10 COMMUNITY HEALTH AND SAFETY (ESS4)

- What safety concerns do you have regarding health facilities?
- How can patient safety be improved?

Probes:

- Infection control
- Emergency response
- Waste disposal

3.11 GRIEVANCE REDRESS MECHANISM (GRM)

- If you have a complaint about a health facility, where do you go?
- Are you aware of any complaint systems?
- How would you prefer to report complaints?

Probes:

- Phone/SMS

- Community leaders
- Facility desks

3.12 RECOMMENDATIONS AND EXPECTATIONS

- What improvements would you like to see in health services?
- What advice do you have for the project team?

4. SPECIALIZED QUESTION ADAPTATIONS BY GROUP

- Women
- Cost of delivery services
- Availability of female health workers
- Cultural/religious considerations
- Urban Poor / Informal Settlements
- Affordability
- Informal providers (chemists, PMVs)
- Distance and transport barriers
- PWDs
- Physical access (ramps, signage)
- Staff attitudes
- Special assistance needs
- Riverine Communities
- Water transport challenges
- Emergency response delays

5. FACILITATION TECHNIQUES

- Use probing questions (“Can you explain further?”)
- Encourage quieter participants
- Avoid leading questions
- Manage dominant participants
- Use real-life examples

6. DOCUMENTATION AND OUTPUTS

- Each FGD should produce:
- Participant profile summary
- Key discussion themes
- Direct quotes (where relevant)
- Major concerns and expectations
- Gender and vulnerability insights

7. ETHICAL CONSIDERATIONS

- Obtain informed consent
- Ensure anonymity in reporting
- Avoid sensitive/personal health disclosures
- Be culturally respectful

Appendix 16: Chance Finds Procedure (CFP)

Lagos State Health Transformative Initiative Project (LHTIP)

1. Purpose and Objective

The objective of this Chance Finds Procedure is to provide clear, step-by-step instructions for project contractors, site supervisors, and workers on how to handle accidental discoveries of cultural heritage, archaeological artifacts, human remains, or structures of historical/religious significance during project excavation and construction works.

This procedure ensures compliance with national heritage laws and international safeguards (such as World Bank / AfDB standards on physical cultural resources) by preventing unauthorized damage, destruction, or removal of historical assets.

2. Scope

This procedure applies to all LHTIP construction, excavation, trenching, demolition, and site-clearing activities across all project axes and primary healthcare facility sites (including Ibereko, Gberefu, Agboyi, and other project locations).

3. Definition of "Chance Find"

A chance find refers to any physical object, structure, artifact, site, or human remains of historical, archaeological, cultural, or religious value that is uncovered unexpectedly during ground-disturbing works. Examples include:

- Pottery fragments, coins, tools, or metal implements.
- Human skeletal remains or burial sites.
- Historic building foundations, old wells, walls, or structural ruins.
- Carved stones, shrines, sacred trees, or ritual objects.

4. Step-by-Step Procedure

Step 1: Immediate Cessation of Work

- In the event of a chance find, the site worker, machine operator, or supervisor must **immediately stop all work, excavation, or heavy machinery operation** within a minimum radius of **10 to 15 meters** of the discovery point.
- Work in other unaffected areas of the site may continue, provided it does not threaten the integrity of the find.

Step 2: Securing the Area

- The Site Supervisor/Contractor's Environmental & Social (E&S) Officer must immediately secure the perimeter using temporary warning tape, fencing, or physical barriers.

- Unauthorized entry, removal, handling, or cleaning of the objects by workers or third parties is strictly prohibited.

Step 3: Notification and Reporting (Within 24 Hours)

- The Contractor's E&S Officer must notify the **Project Implementation Unit (PIU) E&S Safeguards Team** within **24 hours** of the discovery.
- The PIU will formally notify relevant statutory heritage bodies, such as the **National Commission for Museums and Monuments (NCMM)** or the **Lagos State Ministry of Tourism, Arts and Culture**, depending on the nature of the find.

Step 4: Expert Assessment and Inspection

- Qualified cultural heritage specialists, archaeologists, or designated state heritage representatives will be deployed to inspect the site and evaluate the significance of the find.
- Based on expert recommendations, the PIU will determine whether the find requires:
    - Preservation in situ (avoiding the area through minor design shifts).
    - Rescue excavation, cataloging, and controlled salvage by professionals.
    - Release of the area for continued works.

Step 5: Resumption of Work

- Construction and excavation work within the cordoned zone may only resume after:
    - The designated heritage authorities or specialists have granted formal clearance.
    - The PIU issues an official "Notice of Work Resumption" to the contractor.

5. Roles and Responsibilities

Stakeholder	Responsibilities
Site Workers & Equipment Operators	Immediately halt work upon encountering suspicious artifacts, remains, or structures; report to the Site Supervisor.
Contractor E&S Officer	Secure the discovery area, prevent unauthorized access, document the find coordinates/photos, and notify the PIU within 24 hours.
Project Implementation Unit (PIU)	Coordinate with statutory heritage authorities (NCMM/State agencies), mobilize experts for evaluation, and manage stakeholder communication.
Heritage Experts / Authorities	Inspect, authenticate, and determine the preservation, salvage, or clearance requirements for the discovered items.

6. Awareness and Training

- **Induction Training:** All construction workers, supervisors, and subcontractors must undergo brief awareness training during site inductions on how to recognize potential cultural or archaeological assets and understand this CFP.
- **Toolbox Talks:** Periodic safety and environmental toolbox talks must reinforce chance find protocols, particularly during deep excavation or trenching phases.