

**Environmental and Social Impact Assessment (ESIA)**  
**Environmental and Social Management Plan (ESMP)**  
**Development of**  
**Dr. H. Marzoeki Mahdi Hospital**



**DOCUMENT CONTROL**

| Versions | Date           | Compiled by | Reviewed by | Status                   |
|----------|----------------|-------------|-------------|--------------------------|
| v1.0     | 31-May-2026    | ESIA Team   | Team Leader | Version 1                |
| V2.0     | 30-June 2026   | ESIA Team   | Team Leader | Version 2                |
| V3.0     | 12-August 2026 | ESIA Team   | Team Leader | Version 3                |
| V4.0     | 18-August 2026 | ESIA Team   | Team Leader | Version 4 (Finalization) |

This document is a Living Document and will be **updated periodically in line with the progress of the RSMM Pre-Feasibility Study (Pre-FS) and Detailed Engineering Design (DED)**, feedback on AMDAL, Technical Approval on Wastewater (*Persetujuan Teknis Air Limbah*), Technical Approval on Emission (*Persetujuan Teknis Emisi*), Technical Approval/Details on Hazardous Waste (*Persetujuan Teknis/Rincian Teknis Limbah B3*), and Traffic Impact Analysis (*Analisis Dampak Lalu Lintas/ANDALALIN*) documents by the corresponding Ministry of Environmental or Environmental Agency evaluation committee, and **feedback from the Asian Infrastructure Investment Bank (AIIB) and the Ministry of Health of Indonesia.**

## FOREWORD

In order to improve the capacity and quality of hospital services in Indonesia, the Indonesian government, through the Ministry of Health, is developing hospitals across the country via the TRUST (Teaching Hospital Referral Upgrading and System Transformation) program. This program focuses on upgrading medical infrastructure and technology, as well as enhancing institutional governance and standardizing the quality of healthcare services. Dr. H. Marzoeki Mahdi Psychiatric Hospital is one of the government hospitals funded by this program as part of its development into a Primary Teaching Hospital (RSPPU).

The development of the RSPPU at Dr. H. Marzoeki Mahdi Psychiatric Hospital is a strategic step in supporting the transformation of the national health system as mandated by Regulation of the Minister of Health of the Republic of Indonesia No. 12 of 2025 concerning the Ministry of Health's Strategic Plan for 2025–2029. This development aims to improve access to and the quality of referral healthcare services while strengthening RSMM's capacity as a sustainable training ground for specialist physicians.

To support the implementation of the TRUST Project, the Government of Indonesia, through the Ministry of Health, has submitted a request for financing to the Asian Infrastructure Investment Bank (AIIB). In support of the AIIB's processing of the TRUST Project financing, Environmental and Social Impact Assessments (ESIA) and Environmental and Social Management Plans (ESMP) are required, in accordance with the AIIB's Environmental and Social Framework (ESF).

The ESIA and ESMP, hereafter referred to as the "ESIA", is prepared to assess and manage potential environmental and social impacts and risks arising from the construction and operation of Dr. H. Marzoeki Mahdi Psychiatric Hospital. The ESIA sets out mitigation measures to reduce adverse impacts and promote long-term environmental and social benefits. It also reflects our commitment to sustainability, transparency, and inclusive development by engaging stakeholders and aligning with national and international standards.

This ESIA is a living document that may be updated, revised, or supplemented as necessary to reflect new information, changing circumstances, or evolving regulatory or project requirements. Any such updates will be made in consultation with relevant stakeholders and in accordance with applicable environmental and social policies and procedures.

We would like to express our gratitude to all parties who have supported the preparation of this ESIA document. It is our sincere hope that this document will serve as an effective guide in ensuring that the development of Dr. H. Marzoeki Mahdi Psychiatric Hospital is carried out

responsibly, sustainably, and provides optimal benefits for the community, the environment, as well as the development of health services and medical education in Indonesia.

Bogor, 21<sup>th</sup> August 2026

Dr. dr. Nova Riyanti Yusuf, Sp.KJ  
President Director

## LIST OF ACRONYMS

|                   |                                                                         |
|-------------------|-------------------------------------------------------------------------|
| AIIB              | : Asian Infrastructure Investment Bank                                  |
| AMDAL             | : Environmental Impact Assessment (Analisis Mengenai Dampak Lingkungan) |
| ANDAL             | : Environmental Impact Analysis (Analisis Dampak Lingkungan)            |
| ANDALALIN         | : Traffic Impact Analysis (Analisis Dampak Lalu Lintas)                 |
| ARAP              | : Abbreviated Resettlement Action Plan                                  |
| B3                | : Hazardous and Toxic Materials and Waste (Bahan Berbahaya dan Beracun) |
| BMAL              | : Wastewater Quality Standard Compliance Assessment                     |
| CHS               | : Community Health and Safety                                           |
| CO <sub>2</sub> e | : Carbon Dioxide Equivalent                                             |
| DS                | : Degree of Saturation                                                  |
| DLH               | : Environmental Agency (Dinas Lingkungan Hidup)                         |
| EHS               | : Environmental, Health and Safety                                      |
| ESF               | : Environmental and Social Framework                                    |
| ESIA              | : Environmental and Social Impact Assessment                            |
| ESMP              | : Environmental and Social Management Plan                              |
| ESS               | : Environmental and Social Standard                                     |
| FPIC              | : Free, Prior and Informed Consultation                                 |
| GAP               | : Gender Action Plan                                                    |
| GBV               | : Gender-Based Violence                                                 |
| GHG               | : Greenhouse Gas                                                        |
| GIIP              | : Good International Industry Practice                                  |
| GIS               | : Geographic Information System                                         |
| GRM               | : Grievance Redress Mechanism                                           |
| HSE               | : Health, Safety and Environment                                        |
| HVAC              | : Heating, Ventilation and Air Conditioning                             |
| IAIA              | : International Association for Impact Assessment                       |
| ILO               | : International Labour Organization                                     |
| IPC               | : Infection Prevention and Control                                      |

|          |                                                                                            |
|----------|--------------------------------------------------------------------------------------------|
| IPSRs    | : Hospital Facilities Maintenance Installation (Instalasi Pemeliharaan Sarana Rumah Sakit) |
| IT       | : Information Technology                                                                   |
| KAN      | : National Accreditation Committee (Komite Akreditasi Nasional)                            |
| KAN      | : National Accreditation Committee (Komite Akreditasi Nasional)                            |
| KA-ANDAL | : Terms of Reference for Environmental Impact Assessment                                   |
| K3       | : Occupational Health and Safety (Keselamatan dan Kesehatan Kerja)                         |
| LAR      | : Land Acquisition and Resettlement                                                        |
| LMP      | : Labor Management Procedure                                                               |
| MEP      | : Mechanical, Electrical and Plumbing                                                      |
| MCU      | : Medical Check-Up                                                                         |
| MoEF     | : Ministry of Environment and Forestry                                                     |
| MoH      | : Ministry of Health                                                                       |
| NAPZA    | : Narcotics, Psychotropics and Addictive Substances                                        |
| NDC      | : Nationally Determined Contribution                                                       |
| NGO      | : Non-Governmental Organization                                                            |
| OHS      | : Occupational Health and Safety                                                           |
| PCU      | : Passenger Car Unit                                                                       |
| PICU     | : Psychiatric Intensive Care Unit                                                          |
| PPE      | : Personal Protective Equipment                                                            |
| PKJN     | : National Center for Community Mental Health (Pusat Kesehatan Jiwa Nasional)              |
| PP       | : Government Regulation (Peraturan Pemerintah)                                             |
| RKL      | : Environmental Management Plan (Rencana Pengelolaan Lingkungan)                           |
| RPL      | : Environmental Monitoring Plan (Rencana Pemantauan Lingkungan)                            |
| RSMM     | : Dr. H. Marzoeki Mahdi Hospital                                                           |
| RSPPU    | : Main Teaching Hospital (Rumah Sakit Pendidikan Penyelenggara Utama)                      |
| RTRW     | : Spatial Plan (Rencana Tata Ruang Wilayah)                                                |
| RDTR     | : Detailed Spatial Plan (Rencana Detail Tata Ruang)                                        |
| SEA/SH   | : Sexual Exploitation, Abuse and Sexual Harassment                                         |
| SEP      | : Stakeholder Engagement Plan                                                              |

|         |                                                                                                                  |
|---------|------------------------------------------------------------------------------------------------------------------|
| TPS     | : Temporary Storage Facility (Tempat Penyimpanan Sementara)                                                      |
| UKL-UPL | : Environmental Management and Monitoring Efforts (Upaya Pengelolaan Lingkungan dan Upaya Pemantauan Lingkungan) |
| UPIP    | : Psychiatric Intensive Care Unit (Unit Perawatan Intensif Psikiatri)                                            |
| WBG     | : World Bank Group                                                                                               |
| WHO     | : World Health Organization                                                                                      |
| WWTP    | : Wastewater Treatment Plant                                                                                     |

## LIST OF CONTENTS

|                                                                                                               |      |
|---------------------------------------------------------------------------------------------------------------|------|
| DOCUMENT CONTROL.....                                                                                         | i    |
| FOREWORD.....                                                                                                 | i    |
| LIST OF ACRONYMS.....                                                                                         | iii  |
| LIST OF CONTENTS.....                                                                                         | vi   |
| LIST OF FIGURES .....                                                                                         | xii  |
| LIST OF TABLES.....                                                                                           | xiv  |
| LIST OF ANNEXES .....                                                                                         | xvii |
| EXECUTIVE SUMMARY .....                                                                                       | 1    |
| RINGKASAN EKSEKUTIF .....                                                                                     | 1    |
| 1 INTRODUCTION .....                                                                                          | 8    |
| 1.1 Project Background.....                                                                                   | 8    |
| 1.2 Project Objectives.....                                                                                   | 9    |
| 1.3 ESIA Objectives.....                                                                                      | 9    |
| 1.4 Project Scope .....                                                                                       | 10   |
| 1.5 Approach and Methodology of ESIA .....                                                                    | 10   |
| 1.6 ESIA Timeline .....                                                                                       | 13   |
| 1.7 Structure of ESIA .....                                                                                   | 14   |
| 2 POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK.....                                                            | 16   |
| 2.1 Indonesian Relevant Policy, Legal, and Administrative Framework.....                                      | 16   |
| 2.2 AIIB Environmental and Social Framework .....                                                             | 20   |
| 2.2.1 AIIB's Environmental and Social Standard 1 (ESS 1):.....                                                | 20   |
| 2.2.2 AIIB's Environmental and Social Standard 2 (ESS 2): Land Acquisition and Involuntary Resettlement. .... | 20   |
| 2.2.3 AIIB's Environmental and Social Standard 3 (ESS 3): Indigenous Peoples....                              | 21   |
| 2.3 Other Relevant International Regulatory Framework.....                                                    | 21   |
| 2.3.1 World Health Organization (WHO) Guidelines .....                                                        | 21   |

|        |                                                                                      |    |
|--------|--------------------------------------------------------------------------------------|----|
| 2.3.2  | International Labour Organization (ILO) Standards .....                              | 21 |
| 2.3.3  | Paris Agreement on Climate Change .....                                              | 22 |
| 2.3.4  | Basel Convention on Hazardous Waste .....                                            | 22 |
| 2.3.5  | World Bank Environmental, Health, and Safety (EHS) Guidelines .....                  | 22 |
| 2.3.6  | ILO's C162 - Asbestos Convention, 1986 (No. 162) .....                               | 22 |
| 2.4    | Gap Analysis .....                                                                   | 22 |
| 3      | PROJECT DESCRIPTION .....                                                            | 34 |
| 3.1    | Description of Existing Facilities .....                                             | 34 |
| 3.1.1  | Development of Dr. H. Marzoeqi Mahdi Hospital .....                                  | 34 |
| 3.1.2  | Detailed Description of Existing Hospital Facilities .....                           | 35 |
| 3.1.3  | Existing Hospital Services and Activities .....                                      | 40 |
| 3.1.4  | Hospital Bed Capacity .....                                                          | 42 |
| 3.1.5  | Electricity Supply .....                                                             | 42 |
| 3.1.6  | Clean Water Supply .....                                                             | 42 |
| 3.1.7  | Solid Waste Management .....                                                         | 43 |
| 3.1.8  | Radiation Exposure Safety Measures from Hospital Activities .....                    | 47 |
| 3.1.9  | Wastewater Management .....                                                          | 49 |
| 3.1.10 | Green Open Space (RTH) .....                                                         | 51 |
| 3.1.11 | Parking Activities .....                                                             | 51 |
| 3.1.12 | Fire Prevention .....                                                                | 51 |
| 3.1.13 | Run-off Water Management .....                                                       | 52 |
| 3.1.14 | Disease Vector Management .....                                                      | 52 |
| 3.2    | Description of Marzoeqi Mahdi Hospital Development Project .....                     | 53 |
| 3.2.1  | Project Setting and Layout .....                                                     | 54 |
| 3.2.2  | Project Component .....                                                              | 56 |
| 3.2.3  | Demolition of Existing Hospital Building .....                                       | 61 |
| 3.2.4  | Relocation of Existing Hospital Services Due to Development Project Activities ..... | 65 |
| 3.3    | Project Implementation Activities .....                                              | 68 |

|       |                                                                  |     |
|-------|------------------------------------------------------------------|-----|
| 3.3.1 | Pre-Construction .....                                           | 69  |
| 3.3.2 | Construction.....                                                | 69  |
| 3.3.3 | Operation.....                                                   | 86  |
| 3.4   | Associated Facilities .....                                      | 107 |
| 3.5   | Land Requirement & Status .....                                  | 112 |
| 3.6   | Project Implementation Schedule.....                             | 112 |
| 4     | ANALYSIS OF ALTERNATIVES.....                                    | 114 |
| 4.1   | Project Site Alternatives .....                                  | 114 |
| 4.2   | Project Schedule Alternatives .....                              | 114 |
| 4.3   | Project Design Alternatives .....                                | 115 |
| 4.4   | Without Project Alternative .....                                | 115 |
| 5     | ENVIRONMENTAL, BIODIVERSITY, AND SOCIAL BASELINE CONDITION ..... | 116 |
| 5.1   | Environmental Baseline .....                                     | 116 |
| 5.1.1 | Climate .....                                                    | 116 |
| 5.1.2 | Chemical-Physical .....                                          | 120 |
| 5.1.3 | Road and Traffic .....                                           | 128 |
| 5.2   | Biodiversity Baseline.....                                       | 130 |
| 5.3   | Social-Economic Baseline.....                                    | 135 |
| 5.3.1 | Social-Economic Profile of the Area of Influence.....            | 135 |
| 5.3.2 | Community Health, Safety and Security Conditions .....           | 139 |
| 5.3.3 | Gender and Vulnerable Groups .....                               | 142 |
| 5.3.4 | Indigenous Peoples Screening .....                               | 148 |
| 5.3.5 | Cultural Heritage Baseline .....                                 | 149 |
| 5.3.6 | Existing Tenant and Livelihood Condition within RSMM.....        | 156 |
| 5.3.7 | Community Perceptions and Expectations toward the Project .....  | 158 |
| 6     | SCREENING AND SCOPING RESULT .....                               | 163 |
| 6.1   | Project Categorization.....                                      | 163 |
| 6.2   | Identification of Legacy Issues .....                            | 164 |
| 6.3   | Sensitive Receptors .....                                        | 165 |

|        |                                                                                   |     |
|--------|-----------------------------------------------------------------------------------|-----|
| 6.4    | Sub-Project Area of Influence .....                                               | 165 |
| 6.5    | Risk and Impact Identification .....                                              | 167 |
| 7      | IDENTIFICATION AND ASSESSMENT OF ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS ..... | 169 |
| 7.1    | Methodology for Impact Identification and Significance Assessment.....            | 169 |
| 7.2    | Scoping and Summary of Anticipated Impacts .....                                  | 170 |
| 7.3    | Environmental and Social Impact Assessment During Pre-Construction Stage...       | 171 |
| 7.4    | Environmental and Social Impact Assessment During Construction Stage .....        | 175 |
| 7.5    | Environmental and Social Impact Assessment During Operation Stage.....            | 181 |
| 7.6    | Summary of Environmental and Social Impacts .....                                 | 186 |
| 8      | GENDER ANALYSIS AND ACTIONS .....                                                 | 190 |
| 8.1    | Gender Baseline .....                                                             | 190 |
| 8.2    | Gender-Specific Risks and Vulnerabilities.....                                    | 192 |
| 8.3    | Gender Action Plan.....                                                           | 194 |
| 8.4    | Monitoring Indicator .....                                                        | 198 |
| 9      | CLIMATE ANALYSIS AND ACTIONS.....                                                 | 202 |
| 9.1    | Climate Risk Assessment .....                                                     | 202 |
| 9.1.1  | Future Climate Risk Analysis .....                                                | 203 |
| 9.1.2  | Climate Hazards, Impacts, and Adaptation Measures.....                            | 204 |
| 9.2    | Green Building .....                                                              | 211 |
| 9.3    | Greenhouse Gas Calculation .....                                                  | 214 |
| 9.3.1  | Major Emission Sources .....                                                      | 214 |
| 9.3.2  | GHG Monitoring Indicators.....                                                    | 218 |
| 9.3.3  | GHG Monitoring and Reporting.....                                                 | 219 |
| 9.3.4  | GHG Monitoring Plan.....                                                          | 219 |
| 9.3.5  | Summary .....                                                                     | 220 |
| 10     | ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN.....                                     | 223 |
| 10.1   | Environmental and Social Impacts Management Measures .....                        | 223 |
| 10.1.1 | Pre-Construction Stage Environmental and Social Management Measures .             | 223 |

|        |                                                                                      |     |
|--------|--------------------------------------------------------------------------------------|-----|
| 10.1.2 | Construction Stage Environmental and Social Management Measures .....                | 227 |
| 10.1.3 | Operation Stage Environmental and Social Management Measures.....                    | 243 |
| 10.2   | Environmental and Social Monitoring Program .....                                    | 251 |
| 10.2.1 | Pre-Construction Stage Monitoring Program.....                                       | 251 |
| 10.2.2 | Construction Stage Monitoring Program .....                                          | 255 |
| 10.2.3 | Operational Stage Monitoring Program .....                                           | 264 |
| 10.3   | Stakeholder Roles and Responsibilities for ESMP Implementation .....                 | 268 |
| 10.4   | Training and Capacity Development .....                                              | 269 |
| 11     | STAKEHOLDER CONSULTATION AND INFORMATION DISCLOSURE .....                            | 272 |
| 11.1   | Objectives of Stakeholder Consultation and Information Disclosure .....              | 272 |
| 11.2   | Stakeholders Consulted During ESIA Preparation .....                                 | 273 |
| 11.3   | Consultation Methods Applied During ESIA Preparation .....                           | 274 |
| 11.4   | Summary of Stakeholder Engagement Activities Conducted During ESIA Preparation ..... | 275 |
| 11.5   | Assessment of Stakeholder Engagement Outcomes .....                                  | 281 |
| 12     | STAKEHOLDER ENGAGEMENT PLAN .....                                                    | 283 |
| 12.1   | Stakeholder Identification.....                                                      | 283 |
| 12.2   | Stakeholder Mapping and Analysis .....                                               | 284 |
| 12.3   | Stakeholder Engagement Program .....                                                 | 285 |
| 12.4   | Resource and Responsibilities .....                                                  | 286 |
| 12.5   | Monitoring and Reporting.....                                                        | 287 |
| 12.6   | Grievance Redress Mechanism .....                                                    | 288 |
| 12.6.1 | Existing Complaint Handling System of RSMM.....                                      | 288 |
| 12.6.2 | Objective of the Project -Level GRM .....                                            | 289 |
| 12.6.3 | Principles for Design of Project GRM.....                                            | 290 |
| 12.6.4 | Grievance Redress Mechanism Process and Procedures.....                              | 292 |
| 12.6.5 | Institutional Arrangement of GRM .....                                               | 297 |
| 12.6.6 | Disclosure of GRM Information .....                                                  | 299 |
| 12.6.7 | AIIB Project Affected Peoples Mechanism (PPM) .....                                  | 300 |

|      |                                                                                                                |     |
|------|----------------------------------------------------------------------------------------------------------------|-----|
| 13   | REFERENCES.....                                                                                                | 301 |
| 14   | ANNEXES .....                                                                                                  | 303 |
| 14.1 | ANNEX A – Labor Management Plan .....                                                                          | 303 |
| 14.2 | ANNEX B – Asbestos Management Plan Framework .....                                                             | 305 |
| 14.3 | ANNEX C – Framework for Preparation of the Construction Environmental and Social Management Plan (CESMP) ..... | 315 |
| 14.4 | ANNEX D – Cultural Heritage Management Plan (CHMP) Framework .....                                             | 318 |
| A.   | Introduction .....                                                                                             | 318 |
| B.   | Regulatory Framework.....                                                                                      | 319 |
| C.   | Cultural Heritage Baseline .....                                                                               | 319 |
| D.   | Risk Identification and Impact Assessment .....                                                                | 320 |
| E.   | Management and Mitigation Measures .....                                                                       | 320 |
| 14.5 | ANNEX E – Record of Public Consultation Meeting .....                                                          | 323 |
| 14.6 | ANNEX F - Hospital Relocation and Transition Management Plan.....                                              | 335 |
| 14.7 | ANNEX G – Commercial Tenant Relocation and Livelihood Restoration Plan ....                                    | 344 |
| 14.8 | ANNEX H – Climate Risk Assessment Report from Swiss Re CatNet® .....                                           | 351 |

## LIST OF FIGURES

|                                                                                                                                    |     |
|------------------------------------------------------------------------------------------------------------------------------------|-----|
| Figure 1.1 ESIA Framework for the RSMM Development Project.....                                                                    | 13  |
| Figure 2.1 Five Administrative Layers of The Government of Indonesia.....                                                          | 16  |
| Figure 3.1. Existing Hospital Building and Facilities Layout.....                                                                  | 39  |
| Figure 3.2. Marzoeki Mahdi Hospital Development Masterplan Layout .....                                                            | 55  |
| Figure 3.3. Hospital Development Phase Masterplan Layout .....                                                                     | 59  |
| Figure 3.4. Overlay of Existing Hospital infrastructures and Building with Development Plan of Dr. H. Marzoeki Mahdi Hospital..... | 64  |
| Figure 3.5. Basecamp and Laydown Area During Phase 1 of Project .....                                                              | 70  |
| Figure 3.6. Basecamp and Laydown Area During Phase II of Project .....                                                             | 71  |
| Figure 3.7. Overlay of Existing Facilities with New Facilities to be Constructed (Buildings that Will be Demolished) .....         | 75  |
| Figure 3.8. Building Demolition Flowchart .....                                                                                    | 76  |
| Figure 3.9. Development Phase Plan .....                                                                                           | 82  |
| Figure 3.10. Basement Parking Development Plan .....                                                                               | 84  |
| Figure 3.11. Zoning Plan of Development of the Dr. H. Marzoeki Mahdi Hospital.....                                                 | 88  |
| Figure 3.12. Project Roadmap .....                                                                                                 | 113 |
| Figure 5.1 Average Monthly Rainfall .....                                                                                          | 117 |
| Figure 5.2 Graph of Monthly Temperature Variations (°C) .....                                                                      | 118 |
| Figure 5.3 Monthly Average Humidity .....                                                                                          | 119 |
| Figure 5.4 Number of Subdistricts that Had Natural Disaster, 2025.....                                                             | 119 |
| Figure 5.5. Wind Direction and Speed .....                                                                                         | 120 |
| Figure 5.6 Air Quality Noise and Vibration Sampling Measurement Sites.....                                                         | 121 |
| Figure 5.7 Ambient Air Quality Data Collection.....                                                                                | 121 |
| Figure 5.8 Noise Level Measurement.....                                                                                            | 122 |
| Figure 5.9 Surface Water Sampling .....                                                                                            | 123 |
| Figure 5.10. Condition of Dr. Sumeru Road .....                                                                                    | 128 |
| Figure 5.11. Cross Section Figure of Dr. Sumeru Road.....                                                                          | 128 |
| Figure 5.12 Documentation of Flora in Project Area and Surroundings .....                                                          | 133 |
| Figure 5.13. Documentation of Fauna in Project Area and Surroundings .....                                                         | 135 |
| Figure 5.14 Population Based on Age Category.....                                                                                  | 137 |
| Figure 5.15 Educational Attainment of Population.....                                                                              | 138 |
| Figure 5.16 Population by Occupation .....                                                                                         | 138 |
| Figure 5.17 Population by Religion.....                                                                                            | 139 |
| Figure 5.18 Health Facilities in Bogor Barat District .....                                                                        | 140 |

|                                                                                        |     |
|----------------------------------------------------------------------------------------|-----|
| Figure 5.19 Primary Healthcare Facility Utilized by Respondents.....                   | 140 |
| Figure 5.20 Reported Health Conditions During the Last 12 Months .....                 | 141 |
| Figure 5.21 Accessibility options for people with disabilities .....                   | 146 |
| Figure 5.22. Location of Potential Cultural Heritage Assets within RSMM Complex .....  | 151 |
| Figure 5.23 Rama Building.....                                                         | 152 |
| Figure 5.24 Medical Check-Up Building .....                                            | 153 |
| Figure 5.25 Gedung Administrasi Pasien & Dental.....                                   | 153 |
| Figure 5.26 Community Awareness of the Proposed Project.....                           | 159 |
| Figure 5.27 Perceived Benefits of the Project.....                                     | 160 |
| Figure 5.28 Community Concerns Related to Project Development .....                    | 160 |
| Figure 5.29 Community Support for the Project.....                                     | 161 |
| Figure 6.1. Area of Impact (AoI) Map of Dr. H. Marzoeqi Mahdi Development Project..... | 166 |
| Figure 9.1. Climate Change and GHG Assessment Framework for RSMM Development .         | 221 |
| Figure 12.1. Grievance Redress Mechanism Process Flowchart.....                        | 293 |
| Figure 12.2. Institutional Arrangement .....                                           | 298 |
| Figure 14.1. Suspected Asbestos Containing Material Mapping.....                       | 306 |
| Figure 14.2. Asbestos Containing Material Identified During Visual Survey.....         | 307 |

## LIST OF TABLES

|                                                                                                                                  |     |
|----------------------------------------------------------------------------------------------------------------------------------|-----|
| Table 1.1. ESIA and AMDAL Study Implementation Schedule .....                                                                    | 14  |
| Table 2.1 Analysis of Policy Gaps between AIIB's ESF and relevant Indonesian Laws and Regulations .....                          | 23  |
| Table 3.1. Details of the Land Area and Existing Buildings at RSMM.....                                                          | 35  |
| Table 3.2. Number of Patients/Visitors at the PKJN of Marzoeki Mahdi Hospital in 2025 ....                                       | 40  |
| Table 3.3. Inpatient Services at Marzoeki Mahdi Hospital .....                                                                   | 41  |
| Table 3.4. Capacity of Dr. H. Marzoeki Mahdi Hospital Based on the Number of Beds .....                                          | 42  |
| Table 3.5. Clean Water Requirements for Operational Activities at Marzoeki Mahdi Hospital .....                                  | 43  |
| Table 3.6. Hazardous Waste According to Waste Sources .....                                                                      | 44  |
| Table 3.7. Existing Building, Demolition/Renovation Plan, and Planned Development Building .....                                 | 61  |
| Table 3.8. Hospital Services Relocation Plan during Phase 1 Construction .....                                                   | 66  |
| Table 3.9. Hospital Services Relocation Plan during Phase 2 Construction .....                                                   | 67  |
| Table 3.10. Project Implementation Activities.....                                                                               | 68  |
| Table 3.11. Hospital Services Relocation Plan during Phase 1 Construction .....                                                  | 71  |
| Table 3.12. Hospital Services Relocation Plan during Phase 2 Construction .....                                                  | 72  |
| Table 3.13. List of Building Containing Asbestos Material in Marzoeki mahdi Hospital.....                                        | 79  |
| Table 3.14. Demolition Process .....                                                                                             | 81  |
| Table 3.15. Eksisting and Planned Operational Workforce.....                                                                     | 87  |
| Table 3.16. Bed Capacity Comparison (Existing and Development).....                                                              | 89  |
| Table 3.17. Clean Water Requirement and Wastewater for Existing Condition of Dr. H. Marzoeki Mahdi Hospital.....                 | 92  |
| Table 3.18. Clean Water Requirement and Wastewater for Development of Dr. H. Marzoeki Mahdi Hospital .....                       | 93  |
| Table 3.19. Summary Comparison of Water Demand and Wastewater Between The Existing Condition and The Development Plan.....       | 98  |
| Table 3.20. Existing Solid Waste (Non-Hazardous Waste) at Marzoeki Mahdi Hospital .....                                          | 98  |
| Table 3.21. Solid Waste Estimation of The Development Phase at Marzoeki Mahdi Hospital .....                                     | 99  |
| Table 3.22. Summary Comparison of Solid (Domestic) Waste Generation Between The Existing Condition and The Development Plan..... | 100 |
| Table 3.23. Existing Hazardous Waste at Marzoeki Mahdi Hospital .....                                                            | 101 |

|                                                                                                                           |     |
|---------------------------------------------------------------------------------------------------------------------------|-----|
| Table 3.24. Hazardous Waste Estimation of The Development Phase at Marzoeeki Mahdi Hospital.....                          | 102 |
| Table 3.25. Summary Comparison of Hazardous Waste Generation Between The Existing Condition and The Development Plan..... | 104 |
| Table 3.26. Parking Space Availability .....                                                                              | 105 |
| Table 3.27 Associated facilities affected by the project. ....                                                            | 108 |
| Table 5.1. Climate Condition.....                                                                                         | 116 |
| Table 5.2. Rainfall Data.....                                                                                             | 117 |
| Table 5.3. Monthly Temperature Variations (°C) .....                                                                      | 118 |
| Table 5.4. Air Quality Sampling, Noise and Vibration Measurement Sites.....                                               | 120 |
| Table 5.5. Air Quality.....                                                                                               | 122 |
| Table 5.6. Noise Level .....                                                                                              | 123 |
| Table 5.7. Surface Water Analytical Result .....                                                                          | 124 |
| Table 5.8. Effluent Analytical Results .....                                                                              | 125 |
| Table 5.9. Groundwater Analytical Results.....                                                                            | 126 |
| Table 5.10. Existing Hazardous Waste Generation .....                                                                     | 126 |
| Table 5.11. PCU Conversion Value.....                                                                                     | 129 |
| Table 5.12. Rapid Traffic Counting Result.....                                                                            | 129 |
| Table 5.13. Flora in Project Location and Surroundings .....                                                              | 131 |
| Table 5.14. Fauna in Project Location and Surroundings .....                                                              | 133 |
| Table 5.15. Population Size and Desity of Menteng Sub District .....                                                      | 136 |
| Table 5.16. Population Growth Rate .....                                                                                  | 136 |
| Table 5.17. Number of School Base on Education Level in Menteng Sub-District.....                                         | 137 |
| Table 5.18 Gender Composition of RSMM Workforce.....                                                                      | 143 |
| Table 5.19 Gender Composition of Specialist and Sub-specialist Doctors.....                                               | 144 |
| Table 5.20 Gender Representation in Management Positions.....                                                             | 144 |
| Table 5.21. Identified Vulnerable Groups in the Area of Influence .....                                                   | 145 |
| Table 5.22 Vulnerable Groups Associated with Hospital Operation.....                                                      | 145 |
| Table 5.23 identified Potential Cultural Heritage Assets within RSMM .....                                                | 150 |
| Table 6.1. List of Legacy Issues .....                                                                                    | 164 |
| Table 7.1. Environmental and Social Risks and Impact During Pre-Construction Stage....                                    | 172 |
| Table 7.2. Environmental and Social Risks and Impacts During Construction Stage.....                                      | 176 |
| Table 7.3. Environmental and social Risks and Impacts During Operations Stage.....                                        | 182 |
| Table 7.4 Summary of Environmental and Social Impact and Residual Impact .....                                            | 188 |
| Table 8.1 Gender Representation in Manajement Positions.....                                                              | 191 |
| Table 8.2. Gender Action Plan .....                                                                                       | 195 |
| Table 8.3. Gender Monitoring Indicator .....                                                                              | 199 |

|                                                                                                                  |     |
|------------------------------------------------------------------------------------------------------------------|-----|
| Table 9.1. Current Climate and Geohazard Risk Screening .....                                                    | 202 |
| Table 9.2. Calculation of Average Future Climate Risk Scores .....                                               | 204 |
| Table 9.3. Climate Hazards, Potential Impacts, and Adaptation Measures.....                                      | 206 |
| Table 9.4. Green Building Measures Incorporated in the RSMM Master Plan and Their Climate Change Relevance ..... | 211 |
| Table 9.5. Proposed Green Building Measures for Detailed Design (DED) .....                                      | 212 |
| Table 9.6. Future Green Building Performance Indicators .....                                                    | 214 |
| Table 9.7. Greenhouse Gas According to Master Plan/Design.....                                                   | 215 |
| Table 9.8. GHG Estimation .....                                                                                  | 216 |
| Table 9.9. Construction Phase GHG Emission Sources.....                                                          | 217 |
| Table 9.10. Existing Operational Phase Emission .....                                                            | 217 |
| Table 9.11. Table Calculation of Annual Electricity Consumption and Operational GHG Emission .....               | 218 |
| Table 9.12. Monitoring Indicators .....                                                                          | 218 |
| Table 9.13. GHG reporting and ESMP Monitoring.....                                                               | 219 |
| Table 10.1. Environmental and Social Management Measures for Pre-Construction Stage .....                        | 224 |
| Table 10.2. Environmental and Social Management Measures for Construction Stage .....                            | 228 |
| Table 10.3. Environmental and Social Management Measures for Operational Stage .....                             | 244 |
| Table 10.4. Environmental and Social Monitoring Measures for Pre-Construction Stage ..                           | 253 |
| Table 10.5. Environmental and Social Monitoring Measures for Construction Stage .....                            | 256 |
| Table 10.6. Environmental and Social Monitoring Measures for Operational Stage .....                             | 265 |
| Table 10.7. Roles and Responsibilities for ESMP Implementation .....                                             | 268 |
| Table 10.8. Training and Capacity Development Program .....                                                      | 270 |
| Table 11.1. Consultation Methods During ESIA Preparation .....                                                   | 275 |
| Table 11.2. Summary of Consultation Activities .....                                                             | 277 |
| Table 12.1. Stakeholder Mapping and Analysis.....                                                                | 284 |
| Table 12.2. Stakeholder Engagement Program.....                                                                  | 286 |
| Table 12.3. Roles and Responsibilities for SEP Implementation .....                                              | 287 |
| Table 12.4. Complaint Handling Overview .....                                                                    | 292 |
| Table 14.1. Indicative Timeline of Asbestos Management Plan Framework Implementation .....                       | 313 |

## LIST OF ANNEXES

|         |                                                                                                  |
|---------|--------------------------------------------------------------------------------------------------|
| ANNEX A | - Labor Management Plan                                                                          |
| ANNEX B | - Asbestos Management Plan Framework                                                             |
| ANNEX C | - Framework for Preparation of the Construction Environmental and Social Management Plan (CESMP) |
| ANNEX D | - Cultural Heritage Management Plan (CHMP) Framework                                             |
| ANNEX E | - Record of Public Consultation Meeting                                                          |
| ANNEX F | - Hospital Relocation and Transition Management Plan                                             |
| ANNEX G | - Commercial Tenant Relocation and Livelihood Restoration Plan                                   |
| ANNEX H | Climate Risk Assessment Report from Swiss Re CatNet®                                             |

## EXECUTIVE SUMMARY

### Background and Project Rationale

The Government of Indonesia, through the Ministry of Health (MoH), is implementing the Teaching Hospital Referral Upgrading and System Transformation Program to strengthen healthcare infrastructure and improve referral services nationwide. As part of this initiative, Dr. H. Marzoeqi Mahdi Psychiatric Hospital (RSMM), Bogor, is being transformed into a Primary Teaching Hospital (Rumah Sakit Pendidikan Penyelenggara Utama/RSPPU) to enhance specialized mental health services while expanding general healthcare capacity.

The Project supports the Ministry of Health Strategic Plan 2025–2029 and contributes to improving healthcare accessibility, medical education, research, institutional capacity and referral service. As the Project is proposed for financing by the Asian Infrastructure Investment Bank (AIIB), it has been prepared in accordance with the AIIB Environmental and Social Framework (ESF) applicable national legislation and relevant international Good International Industry Practice (GIIP). The Environmental and Social Impact Assessment (ESIA) identifies potential environmental and social risks and opportunities and establishes mitigation, monitoring, and management measures throughout the Project lifecycle.

### Project Description

The Project will be implemented entirely within the existing RSMM hospital complex located at Jalan Dr. Semeru No. 114, Bogor City, West Java. No acquisition of additional land is required.

The development will be undertaken in two implementation phases consisting of demolition of obsolete buildings and construction of new healthcare, educational, administrative, and supporting facilities. Major facilities include new inpatient and outpatient buildings, emergency departments, psychiatric treatment facilities, teaching hospital buildings, dormitories and training centers, management offices, utility and medical waste management facilities, as well as supporting infrastructure.

During construction, RSMM will remain operational. Accordingly, a Hospital Relocation and Transition Management Plan (HRTMP) has been prepared to ensure continuity of healthcare services, safe patient movement, phased relocation of hospital functions, emergency access, and protection of vulnerable patients throughout the construction period.

The Project will also require the temporary relocation of several commercial tenants operating within the hospital complex. A Commercial Tenant Relocation and Livelihood Restoration Plan (CTRLRP) has therefore been prepared to guide consultation, phased relocation, livelihood

restoration, monitoring, and continued engagement with affected tenants in accordance with AIIB Environmental and Social Standards.

Upon completion, the Project will significantly improve healthcare capacity, strengthen Indonesia's mental health referral system, expand medical education facilities, and enhance the quality of psychiatric and general healthcare services.

### **Scope and Approach of the Assessment**

The ESIA covers pre-construction, construction, and operational phases of the Project, including associated facilities. The assessment has been undertaken in accordance with Indonesian environmental legislation, AIIB Environmental and Social Standards (ESS 1 and ESS 2), WHO Guidelines, World Bank Group Environmental, Health and Safety (EHS) Guidelines, ILO conventions, and other applicable international standards.

The assessment methodology comprised:

- Review of legal, institutional, and policy frameworks;
- Environmental and social baseline surveys;
- Air quality, noise, vibration, surface water, groundwater, and biodiversity assessments;
- Socio-economic and stakeholder surveys;
- Climate risk assessment and greenhouse gas (GHG) estimation;
- Environmental and social impact identification using qualitative risk assessment;
- Application of the mitigation hierarchy;
- Preparation of the Environmental and Social Management Plan (ESMP), Stakeholder Engagement Plan (SEP), Gender Action Plan (GAP), Hospital Relocation and Transition Management Plan (HRTMP), Commercial Tenant Relocation and Livelihood Restoration Plan (CTRLRP), and Project-level Grievance Redress Mechanism (GRM).

### **Environmental and Social Baseline**

Baseline studies were undertaken through field surveys, laboratory analysis, stakeholder consultations, household surveys, focus group discussions, and review of secondary information.

The Project area is situated within the existing RSMM hospital complex and is surrounded by urban residential areas, educational facilities, commercial establishments, and public infrastructure. Environmental baseline investigations covered ambient air quality, noise, vibration, surface water, groundwater, wastewater, flora and fauna, solid waste management, hazardous medical waste, occupational health and safety conditions, traffic, and climate characteristics.

Social baseline studies included demographic conditions, livelihoods, local economic activities, public health, vulnerable groups, gender considerations, cultural heritage, stakeholder mapping, and community perceptions regarding the Project.

The hospital currently possesses extensive green open space which contributes to local biodiversity, urban microclimate regulation, and environmental quality.

In recognition of the hospital's role as a national mental health referral facility, the Project incorporates disability-inclusive principles into both infrastructure design and hospital operations. The detailed engineering design will be reviewed by qualified accessibility and disability experts to ensure that buildings, circulation routes, emergency facilities, signage, and patient services are accessible to persons with physical, sensory, intellectual, and psychosocial disabilities. In addition, relevant hospital Standard Operating Procedures (SOPs) will be reviewed and updated, where necessary, to ensure consistency with applicable Indonesian regulations and the principles of the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD).

### **Impact Assessment Summary**

The assessment concludes that the construction phase presents the highest environmental and social risks. Key potential impacts include:

#### **Pre-Construction**

- Community concern;
- Exclusion of vulnerable groups;
- Occupational safety risks;
- Inadequate consideration of Cultural Heritage values;
- Inadequate consideration of protected flora and fauna species.

#### **Construction**

- Dust emissions;
- Noise and vibration;
- Increased runoff, sedimentation, and localized flooding risk;
- Construction waste generation;
- Hazardous waste generation;
- Asbestos Containing Material (ACM) exposure;
- Disturbance to flora and fauna;
- Traffic congestion and road safety risks
- Community Health and Safety (CHS) risks;
- Occupational Health and Safety (OHS) and labor and working condition risks;

- Temporary livelihood impacts on commercial tenants and vendors requiring phased relocation and livelihood restoration;
- Local employment and business opportunities
- Physical damage to potential Cultural Heritage assets (ODCB)
- Alteration of historical architectural character
- Chance discovery of undocumented heritage features.

#### Operation

- Improved healthcare access and service quality;
- Increased employment opportunities;
- Healthcare waste generation;
- Wastewater generation;
- Increased traffic volume;
- Occupational health and safety risk, including risks associated with patient handling and mental health services;
- Community health and safety risks;
- Risk of exclusion or unequal access for vulnerable patients, including persons with mental disabilities;
- Increased consumption of water and energy resources;
- Preservation and promotion of cultural heritage values.

#### Cumulative Impacts

Cumulative impacts were assessed considering interactions between Project activities, ongoing hospital operations, surrounding urban development, public utilities, and traffic conditions.

The principal cumulative impacts relate to traffic, temporary construction disturbance, utility demand, wastewater generation, healthcare waste management, and community accessibility. These impacts are expected to remain manageable through implementation of the ESMP, Traffic Management Plan, HRTMP, Commercial Tenant Relocation and Livelihood Restoration Plan, and continuous stakeholder engagement.

Long-term cumulative benefits include strengthened healthcare services, expanded specialist education, increased employment, preservation of cultural heritage assets, and improved regional healthcare accessibility.

#### Climate Change Assessment

Climate analysis considered both climate adaptation and climate mitigation. The Project evaluated future risks associated with increasing temperature, extreme rainfall, flooding, and

changing precipitation patterns. Adaptation measures incorporated into the design include improved drainage systems, resilient building design, emergency preparedness, and climate-resilient infrastructure.

Greenhouse gas assessment identified electricity consumption, emergency generators, medical gases, transportation, and hospital operations as principal emission sources. Mitigation measures include:

- Green building design;
- Energy-efficient HVAC systems;
- LED lighting;
- Water conservation;
- Renewable energy integration where feasible;
- Efficient medical equipment;
- Green open space preservation;
- Periodic GHG monitoring and reporting.

### **Environmental and Social Management Plan (ESMP)**

The ESMP establishes a comprehensive environmental and social management measures covering all Project phases..

The ESMP includes specific management plans addressing:

- Air quality and noise;
- Waste management;
- Wastewater management;
- Traffic management;
- Occupational health and safety;
- Labour and working conditions;
- Community health and safety;
- Infection prevention and control;
- Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH);
- Cultural heritage;
- Biodiversity;
- Climate resilience;
- Stakeholder engagement;
- Hospital relocation and operational continuity;
- Commercial tenant relocation and livelihood restoration

Implementation responsibilities are assigned to the Project Management Unit (PMU), contractors, supervision consultants, environmental and social specialists, occupational health and safety personnel, and relevant government agencies.

### **Stakeholder Engagement and Grievance Redress Mechanism**

Stakeholder engagement has been undertaken throughout Project preparation through consultations with government agencies, hospital management, affected communities, commercial tenants, hospital employees, vulnerable groups, and other stakeholders. Feedback received during consultations has been incorporated into the ESIA, ESMP, and associated management plans.

The Project has established a Project-level Grievance Redress Mechanism (GRM) by expanding RSMM's existing complaint handling system to address Project-related environmental and social issues.

Complaints may be submitted through multiple channels, including:

- Telephone: (+62 251) 8324024
- WhatsApp: +62 812-9748-7447
- Email: rsmm.bgr@gmail.com
- Website: <https://rsmmbogor.com>
- Suggestion boxes;
- Written correspondence;
- Direct reporting to RSMM or the Project Management Unit.

All grievances will be registered, acknowledged, screened to determine whether they relate to routine hospital operations or Project activities, investigated by the responsible unit, and resolved within established timeframes. Project-related grievances will be monitored and reported regularly to AIIB as part of environmental and social monitoring.

Confidential procedures have also been established for complaints related to Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH). These complaints will be managed using a survivor-centred approach that ensures confidentiality, protection from retaliation, and referral to appropriate support services.

### **Independent Accountability Mechanism**

In addition to the Project-level Grievance Redress Mechanism, Project-affected people may access the Asian Infrastructure Investment Bank's (AIIB) independent accountability mechanism when concerns cannot be satisfactorily resolved through the Project GRM or AIIB Management processes.

The Project-affected People's Mechanism (PPM) has been established by AIIB to provide an independent and impartial review of submissions from Project-affected people who believe they have been or are likely to be adversely affected by AIIB's failure to implement its Environmental and Social Policy.

Further information regarding the PPM and submission procedures is available at:

<https://www.aiib.org/en/policies-strategies/operational-policies/policy-on-the-project-affected-mechanism.html>

## **Conclusion**

The ESIA concludes that the Project will generate substantial long-term positive environmental and social benefits through improved healthcare infrastructure, strengthened mental health referral services, expanded specialist medical education, enhanced research capacity, increased employment opportunities, and conservation of important cultural heritage assets.

Potential adverse environmental and social impacts are generally temporary, localized, and manageable through implementation of the ESMP and associated management plans, including the Hospital Relocation and Transition Management Plan (HRTMP), Commercial Tenant Relocation and Livelihood Restoration Plan (CTRLRP), Stakeholder Engagement Plan (SEP), Gender Action Plan (GAP), and Project-level Grievance Redress Mechanism (GRM). With effective implementation of these measures, no significant adverse residual impacts are anticipated, and the Project is considered environmentally and socially feasible in accordance with applicable Indonesian regulations and the AIIB Environmental and Social Framework.

## RINGKASAN EKSEKUTIF

### Latar Belakang dan Tujuan Proyek

Pemerintah Indonesia melalui Kementerian Kesehatan melaksanakan Program Transformasi Sistem Rujukan dan Peningkatan Rumah Sakit Pendidikan (Teaching Hospital Referral Upgrading and System Transformation Program) sebagai bagian dari upaya memperkuat infrastruktur pelayanan kesehatan dan meningkatkan sistem rujukan nasional. Dalam program tersebut, Rumah Sakit Dr. H. Marzoeqi Mahdi (RSMM) Bogor dikembangkan menjadi Rumah Sakit Pendidikan Penyelenggara Utama (RSPPU) guna memperkuat pelayanan kesehatan jiwa sekaligus meningkatkan kapasitas pelayanan kesehatan umum, pendidikan kedokteran, penelitian, dan pelayanan rujukan.

Proyek ini mendukung Rencana Strategis Kementerian Kesehatan Tahun 2025–2029 serta berkontribusi terhadap peningkatan akses pelayanan kesehatan, pendidikan dokter spesialis, pengembangan penelitian, penguatan kapasitas kelembagaan, dan peningkatan mutu pelayanan kesehatan.

Sehubungan dengan rencana pembiayaan Proyek oleh Asian Infrastructure Investment Bank (AIIB), penyusunan Environmental and Social Impact Assessment (ESIA) dilakukan sesuai dengan Kerangka Kerja Lingkungan dan Sosial AIIB (Environmental and Social Framework/ESF), peraturan perundang-undangan Indonesia, serta praktik internasional yang baik (Good International Industry Practice/GIIP). ESIA ini bertujuan untuk mengidentifikasi potensi dampak lingkungan dan sosial, menilai tingkat signifikansinya, serta menyusun langkah-langkah pengelolaan, pemantauan, dan mitigasi selama seluruh siklus Proyek.

### Deskripsi Proyek

Proyek akan dilaksanakan sepenuhnya di dalam kawasan eksisting Rumah Sakit Dr. H. Marzoeqi Mahdi yang berlokasi di Jalan Dr. Semeru No. 114, Kota Bogor, Provinsi Jawa Barat. Seluruh kegiatan pembangunan dilaksanakan di atas lahan milik rumah sakit sehingga tidak memerlukan pengadaan lahan baru maupun relokasi masyarakat.

Pengembangan rumah sakit akan dilakukan secara bertahap melalui pembongkaran bangunan yang sudah tidak sesuai dengan kebutuhan pelayanan, kemudian dilanjutkan dengan pembangunan berbagai fasilitas baru, meliputi gedung rawat inap, rawat jalan, instalasi gawat darurat, fasilitas pelayanan kesehatan jiwa, gedung pendidikan, asrama, pusat pelatihan, gedung administrasi, fasilitas utilitas, fasilitas pengelolaan limbah medis, serta infrastruktur pendukung lainnya.

Karena rumah sakit tetap beroperasi selama masa konstruksi, Proyek telah menyusun Hospital Relocation and Transition Management Plan (HRTMP) sebagai pedoman pelaksanaan relokasi layanan secara bertahap guna menjamin keberlangsungan pelayanan kesehatan, keselamatan pasien, kelancaran perpindahan layanan, serta akses darurat selama proses pembangunan berlangsung.

Selain itu, beberapa tenant komersial yang saat ini beroperasi di dalam kawasan rumah sakit akan terdampak secara sementara akibat pelaksanaan pembangunan. Oleh karena itu, Proyek telah menyusun Commercial Tenant Relocation and Livelihood Restoration Plan (CTRLRP) yang mengatur proses konsultasi, relokasi bertahap, pemulihan mata pencaharian, serta pemantauan terhadap tenant yang terdampak sesuai dengan persyaratan Environmental and Social Standards AIIB.

Setelah pembangunan selesai, Proyek diharapkan mampu meningkatkan kapasitas pelayanan rumah sakit secara signifikan, memperkuat sistem rujukan kesehatan jiwa nasional, meningkatkan kapasitas pendidikan dokter spesialis dan penelitian, serta meningkatkan mutu pelayanan kesehatan jiwa maupun pelayanan kesehatan umum.

### **Ruang Lingkup dan Pendekatan Kajian**

Kajian ESIA mencakup seluruh tahapan Proyek, yaitu tahap pra-konstruksi, konstruksi, operasi, serta fasilitas terkait (associated facilities).

Penyusunan ESIA dilakukan mengacu pada ketentuan peraturan perundang-undangan Indonesia, Kerangka Kerja Lingkungan dan Sosial AIIB, Pedoman WHO, Pedoman Lingkungan, Kesehatan, dan Keselamatan Kerja (EHS Guidelines) dari World Bank Group, konvensi ILO, serta standar internasional lainnya yang relevan.

Metodologi kajian meliputi:

- kajian terhadap kerangka hukum, kebijakan, dan kelembagaan;
- survei kondisi dasar lingkungan dan sosial;
- pengukuran kualitas udara, kebisingan, getaran, kualitas air, keanekaragaman hayati, dan lalu lintas;
- survei sosial ekonomi, gender, dan pemangku kepentingan;
- analisis risiko perubahan iklim dan estimasi emisi gas rumah kaca;
- identifikasi dan penilaian risiko lingkungan dan sosial menggunakan matriks risiko kualitatif;
- penerapan hierarki mitigasi;
- penyusunan Environmental and Social Management Plan (ESMP), Stakeholder Engagement Plan (SEP), Gender Action Plan (GAP), Hospital Relocation and

Transition Management Plan (HRTMP), Commercial Tenant Relocation and Livelihood Restoration Plan (CTRLRP), serta mekanisme penanganan keluhan Proyek (Project-level Grievance Redress Mechanism/GRM).

### **Kondisi Dasar Lingkungan dan Sosial**

Kajian kondisi dasar dilakukan melalui survei lapangan, analisis laboratorium, survei rumah tangga, konsultasi publik, diskusi kelompok terarah (focus group discussion), serta kajian terhadap berbagai data sekunder.

Lokasi Proyek berada di dalam kawasan Rumah Sakit Dr. H. Marzoeki Mahdi yang dikelilingi oleh kawasan permukiman, fasilitas pendidikan, area komersial, dan infrastruktur publik. Kajian lingkungan mencakup kualitas udara ambien, kebisingan, getaran, kualitas air, pengelolaan air limbah, keanekaragaman hayati, pengelolaan limbah medis, keselamatan dan kesehatan kerja, kondisi lalu lintas, serta karakteristik iklim.

Kajian sosial meliputi kondisi kependudukan, komposisi gender, mata pencaharian masyarakat, kelompok rentan, warisan budaya, tenant komersial, pemetaan pemangku kepentingan, dan persepsi masyarakat terhadap Proyek.

Rumah sakit juga memiliki kawasan ruang terbuka hijau yang cukup luas sehingga memberikan kontribusi terhadap konservasi keanekaragaman hayati serta kualitas lingkungan perkotaan.

Sebagai rumah sakit rujukan nasional di bidang kesehatan jiwa, Proyek juga mengintegrasikan prinsip-prinsip aksesibilitas dan inklusi bagi penyandang disabilitas ke dalam desain maupun operasional rumah sakit. Rancangan teknis rumah sakit akan ditinjau oleh tenaga ahli yang memiliki kompetensi di bidang aksesibilitas dan disabilitas untuk memastikan bahwa bangunan, jalur sirkulasi, fasilitas darurat, sistem informasi, serta pelayanan rumah sakit dapat diakses oleh penyandang disabilitas fisik, sensorik, intelektual, maupun disabilitas psikososial. Selain itu, berbagai Standar Prosedur Operasional (SPO) rumah sakit akan ditinjau dan diperbarui apabila diperlukan agar selaras dengan ketentuan nasional serta prinsip-prinsip United Nations Convention on the Rights of Persons with Disabilities (UNCRPD).

### **Ringkasan Dampak Lingkungan dan Sosial**

Hasil kajian menunjukkan bahwa tahap konstruksi merupakan tahapan dengan potensi dampak lingkungan dan sosial terbesar.

#### **Tahap Pra-Konstruksi**

- Kekhawatiran masyarakat terhadap pelaksanaan pembangunan;

- Potensi tidak terakomodasinya kelompok rentan dalam proses konsultasi;
- Risiko keselamatan dan kesehatan kerja pada tahap persiapan;
- Belum optimalnya pertimbangan terhadap nilai-nilai cagar budaya;
- Belum optimalnya pertimbangan terhadap flora dan fauna dilindungi.

#### Tahap Konstruksi

- Emisi debu;
- Kebisingan dan getaran;
- Limpasan permukaan, sedimentasi, dan potensi genangan;
- Timbulan limbah konstruksi;
- Timbulan limbah B3;
- Paparan material mengandung asbestos (ACM);
- Gangguan terhadap flora dan fauna;
- Gangguan lalu lintas dan keselamatan jalan;
- Risiko kesehatan dan keselamatan masyarakat;
- Risiko keselamatan dan kesehatan kerja serta kondisi ketenagakerjaan;
- Dampak sementara terhadap mata pencaharian tenant komersial yang memerlukan relokasi dan pemulihan mata pencaharian;
- Peluang kerja dan usaha bagi masyarakat lokal;
- Dampak terhadap aset cagar budaya;
- Perubahan karakter arsitektur historis;
- Penemuan tidak terduga terhadap objek yang memiliki nilai budaya.

#### Tahap Operasi

- Peningkatan akses dan mutu pelayanan kesehatan;
- Peningkatan kesempatan kerja;
- Timbulan limbah medis;
- Timbulan air limbah;
- Peningkatan volume lalu lintas;
- Risiko keselamatan dan kesehatan kerja;
- Risiko kesehatan dan keselamatan masyarakat;
- Risiko tidak meratanya akses pelayanan bagi kelompok rentan, termasuk penyandang disabilitas mental;
- Peningkatan konsumsi air dan energi;
- Pelestarian dan pemanfaatan nilai cagar budaya.

#### Dampak Kumulatif

Kajian dampak kumulatif mempertimbangkan interaksi antara kegiatan Proyek, operasional rumah sakit yang tetap berlangsung, perkembangan kawasan sekitar, utilitas publik, serta kondisi lalu lintas.

Dampak kumulatif utama meliputi peningkatan lalu lintas, gangguan sementara akibat kegiatan konstruksi, peningkatan kebutuhan utilitas, peningkatan timbulan air limbah dan limbah medis, serta perubahan akses masyarakat.

Seluruh dampak tersebut diperkirakan dapat dikelola melalui implementasi ESMP beserta rencana-rencana pendukung, termasuk Hospital Relocation and Transition Management Plan (HRTMP), Commercial Tenant Relocation and Livelihood Restoration Plan (CTRLRP), serta pelaksanaan konsultasi publik secara berkelanjutan.

### **Kajian Perubahan Iklim**

Kajian perubahan iklim mencakup aspek adaptasi maupun mitigasi emisi gas rumah kaca.

Langkah-langkah adaptasi meliputi penerapan desain bangunan yang tangguh terhadap perubahan iklim, peningkatan kapasitas drainase, kesiapsiagaan menghadapi keadaan darurat, efisiensi penggunaan air, serta pelestarian ruang terbuka hijau.

Sementara itu, langkah mitigasi meliputi penerapan konsep bangunan hijau, penggunaan sistem HVAC hemat energi, lampu LED, konservasi air, pemanfaatan energi terbarukan apabila memungkinkan, penggunaan peralatan medis hemat energi, pelestarian ruang terbuka hijau, serta pemantauan emisi gas rumah kaca secara berkala.

### **Rencana Pengelolaan Lingkungan dan Sosial (ESMP)**

ESMP disusun sebagai kerangka pengelolaan lingkungan dan sosial yang mencakup seluruh tahapan Proyek.

ESMP memuat berbagai rencana pengelolaan, antara lain pengelolaan kualitas udara dan kebisingan, limbah, air limbah, lalu lintas, keselamatan dan kesehatan kerja, kondisi ketenagakerjaan, kesehatan dan keselamatan masyarakat, pengendalian infeksi, pencegahan GBV/SEA/SH, perlindungan cagar budaya, konservasi keanekaragaman hayati, ketahanan iklim, pelibatan pemangku kepentingan, relokasi layanan rumah sakit, serta relokasi tenant dan pemulihan mata pencaharian.

### **Pelibatan Pemangku Kepentingan dan Mekanisme Penanganan Keluhan**

Pelibatan pemangku kepentingan telah dilakukan sejak tahap penyusunan ESIA melalui konsultasi dengan instansi pemerintah, manajemen rumah sakit, masyarakat sekitar, tenant komersial, pekerja rumah sakit, kelompok rentan, dan para pemangku kepentingan lainnya.

Proyek telah mengembangkan Mekanisme Penanganan Keluhan (Grievance Redress Mechanism/GRM) yang memanfaatkan sistem pengaduan RSMM dan diperluas untuk menangani keluhan yang berkaitan dengan pelaksanaan Proyek.

Keluhan dapat disampaikan melalui:

- Telepon: (0251) 8324024
- WhatsApp: +62 812-9748-7447
- Email: rsmm.bgr@gmail.com
- Website: <https://rsmmbogor.com>
- Kotak pengaduan;
- Surat tertulis; atau
- Penyampaian langsung kepada RSMM maupun Project Management Unit (PMU).

Seluruh keluhan akan dicatat, diverifikasi, ditindaklanjuti, dan diselesaikan sesuai prosedur yang telah ditetapkan. Keluhan terkait Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA), serta Sexual Harassment (SH) akan ditangani melalui mekanisme khusus yang menjamin kerahasiaan, perlindungan korban, serta rujukan kepada layanan pendukung yang sesuai.

### **Mekanisme Akuntabilitas Independen AIIB**

Selain menggunakan mekanisme penanganan keluhan Proyek, masyarakat yang terdampak juga dapat mengajukan pengaduan melalui Project-affected People's Mechanism (PPM) milik AIIB apabila keluhan tidak dapat diselesaikan secara memadai melalui mekanisme penanganan keluhan Proyek maupun proses yang dilakukan oleh AIIB.

Informasi lebih lanjut mengenai mekanisme tersebut dapat diakses melalui:

<https://www.aiib.org/en/policies-strategies/operational-policies/policy-on-the-project-affected-mechanism.html>

### **Kesimpulan**

Berdasarkan hasil kajian ESIA, Proyek diperkirakan akan memberikan manfaat lingkungan dan sosial yang signifikan dalam jangka panjang melalui peningkatan kapasitas pelayanan kesehatan, penguatan sistem rujukan kesehatan jiwa, peningkatan pendidikan dokter spesialis, pengembangan penelitian, penciptaan lapangan kerja, serta pelestarian aset cagar budaya yang berada di dalam kawasan RSMM.

Potensi dampak negatif yang timbul umumnya bersifat sementara, terbatas pada area Proyek, dan dapat dikelola melalui implementasi Environmental and Social Management Plan (ESMP) beserta berbagai rencana pengelolaan pendukung, termasuk Hospital Relocation and

Transition Management Plan (HRTMP), Commercial Tenant Relocation and Livelihood Restoration Plan (CTRLRP), Stakeholder Engagement Plan (SEP), Gender Action Plan (GAP), serta Project-level Grievance Redress Mechanism (GRM). Dengan penerapan seluruh langkah pengelolaan dan pemantauan tersebut, tidak terdapat dampak sisa yang signifikan sehingga Proyek dinilai layak untuk dilaksanakan sesuai dengan ketentuan peraturan perundang-undangan Indonesia dan Kerangka Kerja Lingkungan dan Sosial AIB.

## 1 INTRODUCTION

### 1.1 Project Background

The Government of Indonesia, through the Ministry of Health, plans to strengthen and expand healthcare services at RS Marzoeki Mahdi as part of the hospital's transformation into a Teaching Hospital as the Main Organizer (Rumah Sakit Pendidikan sebagai Penyelenggara Utama/RSPPU) targeted for completion in 2027. The proposed development, hereinafter referred to as the "RS Marzoeki Mahdi Project" or the "Project", forms part of the Government's broader initiative to improve the accessibility, capacity, and quality of public healthcare services in Indonesia, particularly through the enhancement of government-owned referral and teaching hospitals.

The Project will be implemented within the existing hospital complex located at Jalan Dr. Semeru No. 114, Bogor City, West Java Province, with a total site area of approximately 221,218 m<sup>2</sup>. The planned development includes the expansion and upgrading of hospital infrastructure and supporting facilities, which may result in environmental and social impacts related to traffic, waste management, wastewater generation, air emissions, occupational health and safety, community health and safety, and other construction and operational activities during the pre-construction, construction, and operational phases.

As the Project is planned to receive financing support from the Asian Infrastructure Investment Bank (AIIB), the Project is required to comply with the AIIB Environmental and Social Framework (ESF), including the preparation of an Environmental and Social Impact Assessment and Environmental and Social Management Plan (ESIA-ESMP). The ESIA-ESMP aims to identify, assess, and manage potential environmental, social, cultural heritage, climate-related, occupational health and safety, and community risks and impacts associated with the Project in accordance with applicable national regulations, international good practices, and AIIB requirements.

The preparation of the ESIA-ESMP will integrate findings from baseline environmental and social studies, stakeholder engagement activities, public consultations, greenhouse gas assessments, climate risk assessments, and environmental and social management planning. The document will support the Project's commitment to sustainable infrastructure development, environmental protection, social inclusion, community health and safety, and meaningful stakeholder engagement throughout the Project lifecycle.

## 1.2 Project Objectives

The primary objective of the Project is to support the development and expansion of RS Marzoeqi Mahdi into a modern teaching and referral hospital capable of improving healthcare service quality, accessibility, and institutional capacity in Indonesia.

Specific objectives of the ESIA-ESMP preparation are as follows:

1. To identify and assess potential environmental and social impacts and risks associated with the Project during the pre-construction, construction, operation, and post-operation phases.
2. To ensure the Project complies with applicable Indonesian environmental regulations and the Environmental and Social Framework requirements of Asian Infrastructure Investment Bank (AIIB).
3. To develop appropriate mitigation, monitoring, and management measures to avoid, minimize, mitigate, or compensate for adverse environmental and social impacts arising from the Project.
4. To establish an Environmental and Social Management Plan (ESMP) that defines institutional responsibilities, monitoring mechanisms, reporting requirements, and implementation arrangements for environmental and social management throughout the Project lifecycle.
5. To incorporate climate change considerations, including greenhouse gas assessment and climate risk analysis, into the Project planning and management process in accordance with international lender standards.
6. To ensure meaningful stakeholder engagement, public consultation, and information disclosure processes are conducted transparently and inclusively, particularly for affected communities and relevant institutions.
7. To support the achievement of environmental approval and AIIB clearance required for Project implementation and financing.

## 1.3 ESIA Objectives

The overall objective of the ESIA is to carry out screening, scoping, analysis, and assessment of the beneficial and adverse environmental and social impacts associated with the Sub project and ensure the negative impacts are avoided, minimized, mitigated, or compensated, and to integrate the E&S considerations into the project design and implementation. The ESIA also aims to comply with the national and AIIB requirements with respect to E&S assessment and management.

## 1.4 Project Scope

The project scope covers the phased development of healthcare facilities, operational support infrastructure, educational facilities, and supporting utilities within the hospital area to enhance the capacity and quality of general medical and mental health services, strengthen the hospital's educational function, and improve overall operational effectiveness and infrastructure management. Both Phase 1 and Phase 2 of the Project will be financed by AIIB. The Project will also involve the demolition of existing buildings as part of the site preparation and redevelopment works. The proposed development consists of the following components:

a. Phase 1 Development:

- NAPZA Building (Narcotics, Psychotropics, and Addictive Substances Center)
- JKN Psychiatri Inpatient Building
- RSMM Management Office
- Teaching Hospital
- Dormitory & Training Center
- Ballroom/Auditorium
- Waste Management & Utility (MEP) Building

b. Phase 2 Development:

- General Services Building (Outpatient clinics, VIP & Regular inpatient wards, MCU facilities, Radiology, Laboratory, etc.)
- General Emergency Department (ER)
- Psychiatric Emergency Department & Psychiatric MCU
- Psychiatric Inpatient & Outpatient Building (VIP)
- UPIP (Psychiatric Intensive Care Unit/PICU) Male & Female
- Quiet Rooms/Transit (pre-inpatient admission)
- Sports Psychiatry Building
- PKJN Building (National Center for Community Mental Health)
- Funeral House

## 1.5 Approach and Methodology of ESIA

The preparation of the Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP) follows a structured methodology that includes the following key steps:

1. Scoping and Initial Screening

- Identification of project components and potential environmental and social risks.

- Consultation with stakeholders to define the scope of the assessment.
- Review of legal and regulatory requirements at the national and international levels.

## 2. Baseline Data Collection

- Environmental Data:
  - Air and water quality assessments through sampling and laboratory analysis.
  - Noise and vibration monitoring using decibel meters.
  - Climate and meteorological data analysis from government agencies.
- Social Data:
  - Socioeconomic surveys conducted through structure household questionnaires administered to affected households (AHs) located within the Project Area of Influence (AoI), particularly households residing adjacent to or in the vicinity of the proposed Project site that may experience direct or indirect environmental and social impacts during project implementation.
  - Stakeholder interviews and focus group discussions with government agencies, hospital management, community representatives, affected persons, and other relevant stakeholders.
  - Land use population, and demographic studies using census data and other relevant government statistical sources.
  - Gender-related baseline information compiled from secondary sources, including population statistics, demographic data, labour characteristics, and RSMM Human Resources records, complemented by primary data obtained through household surveys and stakeholder consultations.

## 3. Impact Assessment

- Identification of potential positive and negative impacts on the environment and communities.
- Qualitative impact evaluation using risk assessment matrices.

## 4. Mitigation and Management Measures

- Development of mitigation strategies to minimize adverse effects.
- Preparation of an Environmental and Social Management Plan (ESMP) with clear implementation timelines and responsibilities.
- Cost estimation for mitigation measures and monitoring programs.

## 5. Public Consultation and Stakeholder Engagement

- Regular consultations with affected communities, government agencies, and NGOs.
- Disclosure of findings through public meetings, reports, and digital platforms.

- Incorporation of stakeholder feedback into project planning.

#### 6. Monitoring and Reporting

- Establishment of an environmental and social monitoring plan.
- Periodic reporting on the implementation of the environmental and social mitigation Measures.

The overall ESIA framework for the RSMM Development Project is presented in Figure 1.1. The framework summarizes the sequence of the ESIA process, starting from project description, regulatory review, baseline assessment, risk and impact assessment, gender and climate analysis, ESMP preparation, stakeholder engagement, and grievance redress mechanism. This framework ensures that environmental, social, climate, health and safety, and stakeholder considerations are integrated into project planning, construction, and operation.



Figure 1.1 ESIA Framework for the RSMM Development Project

## 1.6 ESIA Timeline

The ESIA process has been designed to ensure that environmental and social considerations are integrated into project planning and decision-making from an early stage. The implementation schedule includes scoping, baseline environmental and social studies, impact assessment, preparation of AMDAL and ESIA documents, stakeholder engagement activities, regulatory review processes, and final approvals from relevant authorities and lenders. The proposed timeline is intended to facilitate compliance with both Indonesian regulatory requirements and applicable AIIB Environmental and Social Framework (ESF) requirements.

As per the preparation of this ESIA document (20<sup>th</sup> of June 2026), the progress of AMDAL is still ongoing, with the current ongoing process is screening (determination of environmental document type and AMDAL evaluation authority) and preparation ANDAL Term of Reference (*Kerangka Acuan ANDAL*). The target of completion for AMDAL study is in December 2026, with the issuance of Environmental Feasibility Decision (Surat Keputusan Kelayakan Lingkungan Hidup) from the West Java Environmental Agency (Dinas Lingkungan Hidup Provinsi Jawa Barat) or other relevant institution as determined in the screening phase. The indicative schedule for the ESIA and AMDAL study is presented in Table 1.1.

**Table 1.1. ESIA and AMDAL Study Implementation Schedule**

| PROJECT IMPLEMENTATION TIMELINE |                                                                    |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
|---------------------------------|--------------------------------------------------------------------|----------|---|---|---|-----------|---|---|---|-----------|---|---|---|--------------|---|---|---|----------------|---|---|---|--------------|---|---|---|---------------|---|---|---|---------------|---|---|---|--|--|--|--|
| No.                             | Uraian Kegiatan                                                    | Mei 2026 |   |   |   | Juni 2026 |   |   |   | Juli 2026 |   |   |   | Agustus 2026 |   |   |   | September 2026 |   |   |   | Oktober 2026 |   |   |   | November 2026 |   |   |   | Desember 2026 |   |   |   |  |  |  |  |
|                                 |                                                                    | 1        | 2 | 3 | 4 | 1         | 2 | 3 | 4 | 1         | 2 | 3 | 4 | 1            | 2 | 3 | 4 | 1              | 2 | 3 | 4 | 1            | 2 | 3 | 4 | 1             | 2 | 3 | 4 | 1             | 2 | 3 | 4 |  |  |  |  |
| I                               | FASE PERSIAPAN & PENGUMPULAN (SCOPING)                             |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 1.1                             | Kick-off Meeting & Mobilisasi Tim                                  |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 1.2                             | Pengumpulan Data Sekunder & Review Desain Proyek                   |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 1.3                             | Pengumuman di Media Massa & Pemasangan Papan Pengumuman            |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 1.4                             | Konsultasi Publik / Sosialisasi Awal (AMDAL dan ESIA)              |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 1.5                             | Penyusunan Draft Formulir KA-ANDAL & Inception Report              |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 1.6                             | Penilaian, Perbaikan & Persetujuan Formulir KA-ANDAL               |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| II                              | SURVEI LAPANGAN & PENGAMBILAN DATA BASELINE                        |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 2.1                             | Survei Geofisik-Kimia (Kualitas Air, Udara, Kebisingan, Getaran)   |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 2.2                             | Survei & Perhitungan Lalu Lintas (Traffic Counting)                |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 2.3                             | Survei Biologi (Flora & Fauna)                                     |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 2.4                             | Survei Sosial, Ekonomi, Budaya, dan Kesehatan Masyarakat           |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 2.5                             | Uji Laboratorium (Terakreditasi KAN) & Tabulasi Data               |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| III                             | PENYUSUNAN DOK. PERTEK, RINTEK & ANDALALIN                         |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 3.1                             | Pemodelan Lalin & Penyusunan Dokumen Andalalin                     |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 3.2                             | Pemodelan Air Limbah & Penyusunan Kajian Pertek BMAL               |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 3.3                             | Penyusunan Rincian Teknis (Rintek) TPS Limbah B3                   |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 3.4                             | Sidang/Pembahasan Andalalin di Dishub/Kemenhub                     |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 3.5                             | Verifikasi/Pembahasan Pertek & Rintek (DUH)                        |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 3.6                             | Penerbitan Persetujuan Andalalin, Pertek & Rintek                  |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| IV                              | PENYUSUNAN DOK. AMDAL & ESIA-ESMP                                  |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 4.1                             | Prediksi & Evaluasi Dampak Lingkungan dan Sosial                   |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 4.2                             | Integrasi Andalalin & Pertek ke dalam Dokumen AMDAL                |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 4.3                             | Penyusunan Draft Dokumen ANDAL, RKL-RPL                            |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 4.4                             | Penyusunan Draft Dokumen ESIA & ESMP (Standar Lender)              |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 4.5                             | Review Draft AMDAL & ESIA oleh Pihak Klien & Lenders               |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| V                               | PROSES PENILAIAN AMDAL & KONSULTASI ESIA                           |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 5.1                             | Rapat Tim Teknis dan Tim Komisi Penilai AMDAL Sidang ANDAL RKL-RPL |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 5.2                             | Perbaikan Dokumen ANDAL RKL-RPL berdasarkan masukan Sidang         |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 5.3                             | Information Disclosure & Public Consultation Draft ESIA            |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 5.4                             | Asistensi perbaikan ANDAL, RKL-RPL                                 |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 5.5                             | Revisi Dokumen ESIA-ESMP berdasarkan masukan Lenders               |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| VI                              | FINALISASI & PERSETUJUAN (APPROVAL)                                |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 6.1                             | Penerbitan Rekomendasi Kelayakan Lingkungan (RKL)                  |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 6.2                             | Pengajuan & Penerbitan SK Persetujuan Lingkungan                   |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 6.3                             | Final Clearance dari Lenders untuk ESIA-ESMP                       |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |
| 6.4                             | Penyerahan Keseluruhan Dokumen Final (Hardcopy & Softcopy)         |          |   |   |   |           |   |   |   |           |   |   |   |              |   |   |   |                |   |   |   |              |   |   |   |               |   |   |   |               |   |   |   |  |  |  |  |

## 1.7 Structure of ESIA

The ESIA report has been prepared and organized as follows:

### 1. Executive Summary

2. Chapter 1: Introduction
3. Chapter 2: Policy, Legal, And Administrative Framework
4. Chapter 3: Project Description
5. Chapter 4: Analysis of Alternatives
6. Chapter 5: Environmental and Social Baseline Conditions
7. Chapter 6: Screening and Scoping Result
8. Chapter 7: Identification and Assessment of Environmental and Social Risks and Impacts
9. Chapter 8: Gender Analysis and Actions
10. Chapter 9: Climate Analysis and Actions
11. Chapter 10: Environmental and Social Management Plan
12. Chapter 11: Stakeholder Consultation and Information Disclosure
13. Chapter 12: Stakeholder Engagement Plan

## 2 POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK

### 2.1 Indonesian Relevant Policy, Legal, and Administrative Framework

Indonesian laws and regulations will serve as the regulatory framework, encompassing all applicable national, provincial, regency, and other local regulations. These regulations will govern the environmental and social aspects of the Project, including environmental assessments, environmental protection requirements, social considerations, land use regulations, as well as international treaties and agreements to which Indonesia is a signatory. Indonesia is divided into five administrative levels (Figure 2-1). At the highest level is the national government, which comprises 38 provinces, each headed by a governor. These provinces (also referred to as Level 1 regions) are further subdivided into kabupaten (regencies) (Level 2 regions), each led by a regent. Regencies are subsequently divided into districts, subdistricts, and villages. In addition to regencies, there are also municipalities or city governments within provinces, which have the same administrative status as regencies. These municipalities are referred to as kota (cities), rather than kabupaten. Each municipality is headed by a mayor.



Figure 2.1 *Five Administrative Layers of The Government of Indonesia*

The national government issues laws and regulations, including those related to environmental and social management, which are complemented by regulations at the provincial and regency levels.

Laws and regulations issued by the Government of Indonesia that are relevant to the Project are listed as follows:

### **Law/Constitution**

- Law No. 17 Year 2023 concerning Health
- Law No. 6 Year 2023 concerning the Stipulation of Government Regulation in Lieu of Law Number 2 of 2022 on Job Creation as Law which amends several existing laws including:
  - Law No. 23 Year 2014 concerning Regional Government
  - Law No. 32 Year 2009 concerning Protection and Management of The Environment
  - Law No. 26 Year 2007 concerning Spatial Planning
  - Law No. 13 Year 2003 concerning Manpower
- Law No. 07 Year 2012 concerning Handling of Social Conflicts
- Law No. 11 Year 2010 concerning Cultural Heritage Conservation
- Law No. 14 Year 2008 on Public Information Disclosure
- Law No. 12 Year 2005 concerning Ratification of International Covenant on Civil and Political Rights
- Law No. 21 Year 2000 concerning Workers/Labour Union Act of Indonesia (Ratification of International Labour Organization Convention)
- Law No. 05 Year 1994 concerning Ratification of the United National Convention on Biological Diversity (United Nation Convention on Biology Diversity)
- Law No. 05 Year 1990 concerning Conservation of Biological Natural Resources and Ecosystem
- Law No. 7 Year 1984 concerning the Ratification of the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW)
- Law No. 07 Year 1981 concerning Mandatory Labour Report in the Company
- Law No. 01 Year 1970 concerning Working Safety.

### **Government Regulation (GR)**

- GR No. 28 of 2025 concerning the Implementation of Risk-Based Business Licensing
- GR No. 28 year 2024 concerning Implementation Regulation on Law No. 17 Year 2023 on Health.
- GR No. 01 Year 2022 concerning National Register and Cultural Heritage Preservation
- GR No. 21 Year 2021 concerning Implementation of Spatial Planning
- GR No. 22 Year 2021 concerning Implementation of Environmental Protection and Management
- GR No. 30 Year 2021 concerning Implementation of Traffic and Road Transport Sector
- GR No. 35 Year 2021 concerning Fixed-term Employment Agreement, Outsourcing, Working and Rest Time, and Termination of Employment
- GR No. 36 Year 2021 concerning Wages

- GR No. 37 Year 2021 concerning Implementation of the Job Loss Guarantee Programme
- GR No. 50 Year 2012 concerning Implementation of Occupational Health and Safety Management System
- GR No. 61 Year 2010 on the Implementation of Public Information Disclosure
- GR No. 74 Year 2001 concerning Management of Hazardous Material
- GR No. 07 Year 1999 concerning Preservation of Flora and Fauna Types

#### **Presidential Regulation and Decree**

- Presidential Regulation No. 186 Year 2014 concerning Empowerment of Remote Indigenous Communities
- Presidential Decree No. 76 Year 2013 concerning Management of Public Service Complaints
- Presidential Instruction No. 9 Year 2000 on Gender Mainstreaming in National Development.
- Presidential Decree No. 111 Year 1999 concerning Social Welfare of Remote Indigenous Communities

#### **Ministerial Regulation and Decree**

##### **Ministry of Environment and Forestry (MoEF)**

- Decree of the Minister of Environment/Head of the Environmental Control Agency No. 1637 of 2025 concerning Integration of the Issuance of Environmental Approval, Technical Approval, Technical Details, and Technical Detail Documents within the Ministry of Environment/Head of the Environmental Control Agency
- Minister of Environment/Environmental Control Agency Regulation No. 11 Year 2025 concerning Wastewater Quality Standards and Wastewater Treatment Technology Standards for Domestic Wastewater
- MoEF Regulation No. 04 Year 2021 concerning A List of Businesses and/or Activities Required to Have Environmental Impact Analysis, Environmental Management Efforts and Environmental Monitoring Efforts or Statement of Commitment to Environmental Management and Monitoring
- MoEF Regulation No. 06 Year 2021 concerning Procedures and Requirements for Management of Hazardous Waste
- MoEF Regulation No. 17 Year 2020 concerning Customary Forests
- MoEF Regulation No. 38 Year 2019 concerning Type of Business Plans and Activities That Require AMDAL

- MoEF Regulation No. 26 Year 2018 concerning Guidelines for the Preparation and Assessment and Examination of Environmental Documents in the Implementation of Electronically Integrated Business Licensing Services
- MoEF Regulation No. 20 Year 2017 concerning Quality Standards for New Types of Motor Vehicle Exhaust Emissions in Category M, N, and O.
- MoEF Regulation No. 14 Year 2013 concerning Hazardous and Toxic Waste Symbols and Labels
- MoEF Regulation No. 16 Year 2012 concerning Development Guidance of Environmental Document
- MoEF Regulation No. 17 Year 2012 concerning Public Participation Guideline for AMDAL And Environmental Permit
- MoEF Regulation No. 13 Year 2011 concerning Compensation Due to Pollution and/or Environmental Damage
- MoEF Regulation No. 48 Year 1996 concerning Quality Standards for Noise from Construction Activities
- MoEF Regulation No. 49 Year 1996 concerning Quality Standards for Vibration from Construction Activities

#### **Ministry of Health (MoH)**

- Minister of Health Decree HK.01.07/MENKES/1596/2024 concerning Hospital Accreditation Standards
- Minister of Health Regulation No. 2 Year 2023 concerning the Implementing Regulation of Government Regulation No. 66 of 2014 on Environmental Health
- Minister of Health Regulations No. 40 Year 2022 concerning Technical Requirements for Hospital Buildings, Infrastructure, and Equipment
- Minister of Health Regulations No. 7 Year 2019 concerning Hospital Environmental Health
- Minister of Health Regulations No. 27 of 2017 concerning Infection Prevention and Control
- Minister of Health Regulations No. 66 of 2016 concerning Occupational Health and Safety in Hospitals (K3RS)
- MoH Regulation No. 718 Year 1987 concerning Noise in Related to Public Health

#### **Local Government Regulation**

- West Java Provincial Regulation No. 9 Year 2022 concerning Spatial Planning of West Java Province 2022–2042
- West Java Provincial Regulation No. 1 Year 2012 concerning Environmental Management and Protection
- West Java Provincial Regulation No. 1 Year 2016 concerning Waste Management

- Bogor City Regional Regulation No. 8 Year 2011 concerning Spatial Planning of Bogor City 2011–2031
- Bogor City Regional Regulation No. 1 Year 2021 concerning Environmental Protection and Management
- Bogor City Regional Regulation No. 9 Year 2012 concerning Waste Management
- Bogor City Regional Regulation No. 3 Year 2021 concerning Building Construction Implementation
- Bogor Mayor Regulation concerning Detailed Spatial Planning (RDTR) and Zoning Regulations applicable to the Project area
- Bogor Mayor Regulation concerning Traffic Impact Analysis (ANDALALIN) implementation and transportation management

## **2.2 AIIB Environmental and Social Framework**

### **2.2.1 AIIB's Environmental and Social Standard 1 (ESS 1):**

The objective of ESS 1 is to achieve the environmental and social soundness and sustainability of Projects and to support the integration of environmental and social considerations into the Project decision-making process and implementation.

Environmental and Social Standard (ESS) 1 applies to this project as the Project is going to have adverse environmental risks and impacts or social risks and impacts during project demolition, construction and operation.

In this project, ESS 1 will apply to the project in a manner that is proportional to the risks and impacts of the Project and aim to provide both for quality environmental and social assessment and for management of risks and impacts through effective mitigation and monitoring measures during the course of Project implementation.

### **2.2.2 AIIB's Environmental and Social Standard 2 (ESS 2): Land Acquisition and Involuntary Resettlement.**

This Environmental and Social Standard (ESS) 2 aims to address the impacts of Project-related land acquisition, including restrictions on land use and access to assets and natural resources, which may cause physical displacement (relocation, loss of land or shelter), and/or economic displacement (loss of land or assets, or restrictions on land use, assets and natural resources leading to loss of income sources or other means of livelihood).

Based on the current Project design, ESS 2 is considered applicable because the Project will be implemented entirely within the existing hospital complex and is not expected to involve land acquisition, physical displacement. However, the Project may cause economic

displacement due to the temporary or permanent relocation of existing business activities within the hospital, including the canteen and cooperative. Such relocation may affect the income and livelihoods of the affected business operators. Therefore, the Project will identify and assess these potential impacts and implement appropriate measures to avoid, minimize, and mitigate economic displacement and livelihood impacts in accordance with the requirements of AIIB ESS 2.

### **2.2.3 AIIB's Environmental and Social Standard 3 (ESS 3): Indigenous Peoples**

This Environmental and Social Standard (ESS) 3 aims to ensure that Indigenous Peoples are respected and are not adversely affected by Project activities. The standard promotes meaningful consultation and culturally appropriate benefits for Indigenous Peoples where they are present in the Project area.

Based on the current Project design and available baseline information, ESS 3 is considered not applicable because the Project is located in Menteng Sub-district, West Bogor District, Bogor City, which has not been identified as an Indigenous Peoples area under AIIB ESS 3. No Indigenous Peoples communities that would require specific measures under ESS 3 have been identified within the Project area of influence.

## **2.3 Other Relevant International Regulatory Framework**

Under the project, the following international legal frameworks are applied to ensure that the project meets global best practices in environmental sustainability, occupational safety, and social responsibility.

### **2.3.1 World Health Organization (WHO) Guidelines**

The WHO Guidelines for Healthcare Facility Management provide best practices on:

- Medical Waste Management – Proper handling, treatment, and disposal of hazardous and infectious hospital waste.
- Infection Prevention and Control (IPC) – Measures to prevent hospital-acquired infections, including ventilation standards, personal protective equipment (PPE), and sanitation.

### **2.3.2 International Labour Organization (ILO) Standards**

- ILO Convention No. 100: Equal Remuneration Convention – Promotes equal remuneration for men and women for work of equal value.
- ILO Convention No. 111: Discrimination (Employment and Occupation) – Prohibits discrimination in hiring, wages, and workplace policies.

- ILO Convention No. 102: Social Security (Minimum Standards) – Ensures proper social security provisions for workers.
- ILO Convention No. 155: Occupational Safety and Health (OSH) – Ensures safe working conditions for healthcare workers and construction laborers.

### **2.3.3 Paris Agreement on Climate Change**

As part of global efforts to combat climate change, the project considers sustainability measures aligned with the Paris Agreement, including:

- Reducing carbon emissions from hospital operations.
- Implementing energy-efficient technologies, such as solar panels and water recycling systems.

### **2.3.4 Basel Convention on Hazardous Waste**

The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal regulates the handling and disposal of medical waste to prevent environmental contamination.

### **2.3.5 World Bank Environmental, Health, and Safety (EHS) Guidelines**

These guidelines are used as a benchmark in projects financed by the World Bank and other international development institutions, particularly when national standards are absent or less stringent. Which covers:

- Environmental: air emissions, wastewater, waste management, noise, resource efficiency.
- Occupational Health & Safety: worker safety, emergency preparedness, hygiene, incident prevention.
- Community Health & Safety: public safety, infrastructure risks, traffic, and hazardous material transport.
- Construction and Decommissioning: pollution prevention, labor conditions, and safety standards for construction activities.

### **2.3.6 ILO's C162 - Asbestos Convention, 1986 (No. 162)**

Indonesia has not ratified this convention.

## **2.4 Gap Analysis**

A policy gap analysis has been carried between AIIB's ESF and Indonesian relevant laws and regulations related to environmental and social regulations. Based on the policy gaps, recommendations have been made in table below.

Table 2.1 Analysis of Policy Gaps between AIIB's ESF and relevant Indonesian Laws and Regulations

| Aspect                                                             | National Regulatory Requirement                                                                                                                                                                                                                             | AIIB ESF Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                    | GAPS                                                                                                                                                                                                                                                                                                                                                                                                              | Approach in this ESIA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Environmental and social assessments – Environmental Scope (ESS 1) | <ul style="list-style-type: none"> <li>- Law Number 32 of 2009 concerning Environmental Protection and Management, as amended by Law Number 6 of 2023.</li> <li>- Government Regulation Number 22 2021 on Environment Protection and Management.</li> </ul> | Conduct environmental and social assessments to identify direct, indirect, cumulative and induced risks associated with the Project and impacts on physical, biological, socio-economic and cultural resources in the Project's area of influence.                                                                                                                                                                                                      | Indonesian environmental regulations require the assessment of direct and cumulative environmental impacts through the AMDAL process. However, national regulations do not explicitly require assessment of induced impacts, labor influx-related risks (including SEA/SH risks), or a comprehensive definition of the Project's area of influence covering broader social, cultural, and ecosystem interactions. | The Project will conduct environmental and social assessments consistent with the AIIB ESF, including the identification of direct, indirect, cumulative, and induced impacts. Induced risks, including labor influx and SEA/SH risks, will be assessed and appropriate mitigation measures incorporated into the <b>ESIA and ESMP</b> .                                                                                                                                                                                |
| Hierarchical approach to mitigation – Environmental Scope (ESS 1)  | No explicit requirement About entering the mitigation hierarchy in the environment and social Management plan.                                                                                                                                              | Apply a hierarchical approach to mitigation in environmental and social assessments, by: (a) anticipating and avoiding risks and impacts; (b) where the avoidance is not feasible, minimizes or reduces the risk and impact to an acceptable level; (c) once the risks and impacts have been minimized or reduced, mitigation; and (d) where residual risk or impact remains, compensation or balance thereof, if technically and financially feasible. | Indonesian regulations do not explicitly require the application of the mitigation hierarchy within Environmental and Social Management Plans (ESMPs).                                                                                                                                                                                                                                                            | <p>The Project will apply the mitigation hierarchy by prioritizing:</p> <ul style="list-style-type: none"> <li>- avoidance of impacts;</li> <li>- minimization and reduction of impacts where avoidance is not feasible;</li> <li>- mitigation measures to manage residual impacts; and</li> <li>- compensation or offset measures, where technically and financially feasible.</li> </ul> <p>Environmental and social considerations will be integrated into both <b>Project design and implementation phases</b>.</p> |
| Associated Facilities –                                            | No requirements in national regulations                                                                                                                                                                                                                     | Screening and assessment of Associated Facilities.                                                                                                                                                                                                                                                                                                                                                                                                      | Indonesian regulations do not explicitly require the identification                                                                                                                                                                                                                                                                                                                                               | The Project will identify and screen Associated Facilities during the detailed design                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| Aspect                                                                 | National Regulatory Requirement                                                                                                                                                                                                                                                                                         | AIIB ESF Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                    | GAPS                                                                                                                                                                                                                                                            | Approach in this ESIA                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Environmental Scope (ESS 1)                                            |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                         | and assessment of Associated Facilities linked to the Project.                                                                                                                                                                                                  | stage. Where Associated Facilities are identified, environmental and social risks and impacts will be assessed in accordance with AIIB ESF requirements to the <b>extent feasible</b> .                                                                                                                                                                                                                                              |
| Associated Facilities – Environmental Scope (ESS 1)                    | No explicit requirement About entering the mitigation hierarchy in the environment and social Management plan.                                                                                                                                                                                                          | Apply a hierarchical approach to mitigation in environmental and social assessments, by: (a) anticipating and avoiding risks and impacts; (b) where the avoidance is not feasible, minimizes or reduces the risk and impact to an acceptable level; (c) once the risks and impacts have been minimized or reduced, mitigation; and (d) where residual risk or impact remains, compensation or balance thereof, if technically and financially feasible. | Indonesian regulations do not explicitly require the application of the mitigation hierarchy within Environmental and Social Management Plans (ESMPs).                                                                                                          | The Project will apply the mitigation hierarchy by prioritizing:<br>- avoidance of impacts;<br>- minimization and reduction of impacts where avoidance is not feasible;<br>- mitigation measures to manage residual impacts; and<br>- compensation or offset measures, where technically and financially feasible.<br>Environmental and social considerations will be integrated into both Project design and implementation phases. |
| People affected by the Project and other – Environmental Scope (ESS 1) | <ul style="list-style-type: none"> <li>- SK. Provincial Governor. DKI Jakarta No. 76/2001, concerning Operational Guidelines for Community Involvement and Information Disclosure in the EIA Process.</li> <li>- Government Regulation Number 22 of 2021 concerning Environmental Protection and Management.</li> </ul> | Conduct meaningful consultations with people affected by the Project and other stakeholders and facilitate their participation in consultations.                                                                                                                                                                                                                                                                                                        | While Indonesian regulations require public consultation during the AMDAL process, national requirements do not fully align with AIIB ESF requirements regarding continuous, meaningful, and inclusive stakeholder engagement throughout the Project lifecycle. | Meaningful consultations will be conducted with affected communities and stakeholders through free, prior, and informed consultation processes. Stakeholder engagement activities will be implemented throughout <b>Project preparation, construction, and operation phases</b> .                                                                                                                                                    |

| Aspect                                                            | National Regulatory Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | AIIB ESF Requirement                                                                                                                                                                                                                                                                                                                     | GAPS                                                                                                                                                                                                                                | Approach in this ESIA                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Environmental Coverage - Environmental Scope (ESS 1)              | <ul style="list-style-type: none"> <li>- Law Number 32 of 2009 concerning Environmental Protection and Management.</li> <li>- Government Regulation Number 22 2021 on Environment Protection and Management.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                        | Conduct a broad assessment of potential environmental risks and impacts, both positive and adverse, associated with the Project.                                                                                                                                                                                                         | Indonesian regulations provide for environmental impact assessment but do not explicitly require the same broad, risk-based assessment of all potential environmental risks and impacts, including positive and adverse impacts     | The ESIA applies a broad, risk-based assessment covering potential positive and adverse environmental risks and impacts throughout the Project lifecycle, with appropriate <b>mitigation and management measures</b>                                        |
| Biodiversity and ecosystem services - Environmental Scope (ESS 1) | <ul style="list-style-type: none"> <li>- Law No. 5 of 1990 on Conservation of Living Natural Resources and their Ecosystems.</li> <li>- Law No. 32 of 2009 on Environmental Protection and Management.</li> <li>- Government Regulation No. 7 of 1999 on Preservation of Plant and Animal Species.</li> <li>- Government Regulation No. 22 of 2021 on Environmental Protection and Management</li> </ul>                                                                                                                                                                                                                       | Consider the Project's direct, indirect and cumulative impacts on biodiversity and ecosystem services, for example, habitat loss, disruption of migration routes or wildlife movements, degradation and fragmentation, invasive species, overexploitation, hydrological changes, nutrient loading, pollution, and incidental harvesting. | National regulations address biodiversity and environmental protection but do not explicitly require assessment of direct, indirect, and cumulative impacts on biodiversity and ecosystem services as comprehensively as AIIB ESS 1 | Biodiversity and ecosystem services are assessed through baseline studies and impact screening. Direct, indirect, and cumulative impacts are considered where relevant, with mitigation measures applied through the <b>mitigation hierarchy</b>            |
| Biodiversity Impacts - Environmental Scope (ESS 1)                | <ul style="list-style-type: none"> <li>- Law Number 5 of 1990 concerning Conservation of Biological Natural Resources and Ecosystems.</li> <li>- Law (UU) Number 5 of 1994 concerning Biodiversity</li> <li>- Government Regulation Number 7 of 1999 concerning Preservation of Flora and Fauna Species.</li> <li>- Presidential Instruction (Inpres) Number 1 of 2023 concerning Biodiversity Conservation.</li> <li>- Ministry of Environmental and Forestry Regulation Number P.106/Menlhk/Setjen/Kum.1/12/2018 concerning the Second Amendment to Regulation of the Minister of Environment and Forestry Number</li> </ul> | Avoid the adverse impact of the Project on biodiversity. Biodiversity offsetting should be designed and implemented to achieve results that can reasonably be expected to result in no net losses and preferably net biodiversity gains.                                                                                                 | National regulations provide general biodiversity protection requirements but do not explicitly require biodiversity offsetting or "no net loss/net gain" approaches consistent with international financing standards.             | The Project will avoid significant impacts on biodiversity and implement mitigation measures in accordance with the mitigation hierarchy. Biodiversity considerations will be integrated into the <b>environmental management framework</b> where relevant. |

| Aspect                                                      | National Regulatory Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | AIIB ESF Requirement                                                                                                                                                                                                                                              | GAPS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Approach in this ESIA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                             | P.20/Menlhk/Setjen/Kum.1/6/2018 concerning Protected Plant and Animal Species.<br>-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Pollution Prevention -<br>Environmental Scope (ESS 1)       | <ul style="list-style-type: none"> <li>- Law Number 32 of 2009 concerning Environmental Protection and Management</li> <li>- Government Regulation Number 22 of 2021 on Environmental Protection and Management.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Implementing pollution prevention and control technologies and practices – consistent with international good practices, as reflected in internationally recognized standards, such as the World Bank Group's Environmental, Health and Safety (EHSG) Guidelines. | National regulations address pollution prevention and control but do not explicitly require alignment with internationally recognized good practices.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | The Project will implement pollution prevention and control measures consistent with applicable Indonesian regulations and the World Bank Group Environmental, Health, and Safety (EHS) Guidelines.                                                                                                                                                                                                                                                                                                                                             |
| Medical Management Garbage -<br>Environmental Scope (ESS 1) | <ul style="list-style-type: none"> <li>- Law Number 18 of 2008 concerning Waste Management</li> <li>- Ministry of Environment and Forestry Regulation Number 56 of 2015 concerning Procedures and Technical Requirements for Hazardous Waste Management from Healthcare Facilities.</li> <li>- Ministry of Environment and Forestry Regulation Number 19 of 2021 concerning Procedures for the Management of Non-Hazardous and Toxic Waste.</li> <li>- Government Regulation Number 22 of 2021 concerning Environmental Protection and Management.</li> <li>- Ministry of Environment and Forestry Regulation Number 6 of 2021 concerning Hazardous Waste Management Procedures and Requirements.</li> </ul> | Medical Waste Management                                                                                                                                                                                                                                          | Government Regulation No. 22/2021 classifies medical waste, which includes clinical waste with infectious properties, pharmaceutical products or expired chemicals, medical and laboratory equipment contaminated with infectious waste, and wastewater treatment sludge from hospitals, among others, as hazardous waste. This regulation stipulates that general hazardous waste must be handled in accordance with the provisions outlined in Government Regulation 22/2021 itself, with specific guidelines stipulated in the Regulation of the Minister of Environment and Forestry No. 6 of 2021 concerning Procedures and Requirements for Hazardous Waste Management (called 'KemenKLHK 6/2021') and the Ministry of Environment and Forestry | <p>The project will ensure compliance with applicable medical waste regulations by:</p> <ul style="list-style-type: none"> <li>- conduct an assessment of existing medical waste management systems;</li> <li>- strengthen waste segregation, storage, transportation, treatment, and disposal systems;</li> <li>- provide training to healthcare personnel;</li> <li>- improve wastewater and hazardous waste management infrastructure; and</li> </ul> <p>establish <b>monitoring and reporting systems</b> for medical waste management.</p> |

| Aspect                                               | National Regulatory Requirement                                                                                                                                                                                                                                                                                                                                                                       | AIIB ESF Requirement                                                                                                                                                                    | GAPS                                                                                                                                                                                                                 | Approach in this ESIA                                                                                                                                                                                                                                                                         |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                      |                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                         | Environment and Forestry Regulation No. 56 of 2015 concerning Procedures and Technical Requirements for the Management of Hazardous Waste from Health Care Facilities.                                               |                                                                                                                                                                                                                                                                                               |
| Resource Efficiency -<br>Environmental Scope (ESS 1) | National regulations generally promote the reduction of resource consumption whenever possible. However, certain methods and standards are not explicitly Proposed.                                                                                                                                                                                                                                   | Resource Efficiency. Implement technically and financially feasible measures to improve the efficiency of energy and water consumption, as well as material resources and other inputs. | National regulations generally encourage resource efficiency but do not provide detailed project-level requirements consistent with international resource efficiency standards.                                     | The Project will implement technically and financially feasible measures to improve energy efficiency, water conservation, and efficient use of raw materials and other resources. Energy-efficient technologies will be considered during equipment <b>procurement and facility design</b> . |
| Climate Change -<br>Environmental Scope (ESS 1)      | <ul style="list-style-type: none"> <li>- Law Number 31 of 2009 concerning Climate Change.</li> <li>- Law Number 16 of 2016 concerning Ratification of the Paris Agreement.</li> <li>- Presidential Regulation Number 98 of 2021 concerning Carbon Economic Value for Achieving Nationally Determined Contribution Targets.</li> </ul>                                                                 | Assess proposed projects in relation to climate change mitigation and adaptation.                                                                                                       | Indonesian regulations support climate change mitigation and adaptation at the national level; however, project-level climate risk assessments and resilience planning are not consistently required across sectors. | Climate risk screening and adaptation measures will be integrated into Project planning and design. The Project will consider climate resilience measures and monitor relevant <b>climate-related indicators</b> .                                                                            |
| Greenhouse gases -<br>Environmental Scope (ESS 1)    | <ul style="list-style-type: none"> <li>- Presidential Regulation Number 98 of 2021: Implementation of Carbon Economic Value for the Achievement of Nationally Determined Contribution Targets and Control of Greenhouse Gas Emissions in National Development.</li> <li>- Presidential Decree Number 14 of 2024: The Government of Indonesia's Efforts to Reduce Greenhouse Gas Emissions.</li> </ul> | Assess alternatives under the Project, and implement technically and financially feasible and cost effective options that Support the Client in meeting their NDCs                      | There is limited guidance regarding project-level estimation, monitoring, and reporting of greenhouse gas (GHG) emissions for medium-scale infrastructure projects.                                                  | The Project will: <ul style="list-style-type: none"> <li>- assess baseline GHG emissions; identify feasible low-carbon alternatives;</li> <li>- incorporate energy-efficient technologies; and</li> </ul> <b>monitor and report GHG emissions</b> where applicable.                           |

| Aspect                                                                  | National Regulatory Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | AIIB ESF Requirement                                                                                                                                                                                                                                                                                                                                           | GAPS                                                                                                                                                                                                                                                                                                             | Approach in this ESIA                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vulnerable groups and discrimination – Social Scope                     | Law 2/2012 as amended in the Omnibus Law does not contain any special provisions on the protection of vulnerable groups in the context of land acquisition for development in the public interest.                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Assess social risks and impacts affecting</b> vulnerable groups or individuals, and <b>discrimination against</b> groups or individuals in providing access to development resources and Project benefits, especially against vulnerable groups                                                                                                             | Indonesian regulations do not explicitly require assessment of disproportionate impacts on vulnerable groups or measures to ensure equitable access to Project benefits.                                                                                                                                         | The Project will identify vulnerable groups through the ESIA process and implement inclusive stakeholder engagement and mitigation measures to ensure equitable access to <b>Project benefits and participation opportunities</b> .                                     |
| Gender – Social Scope                                                   | <ul style="list-style-type: none"> <li>- Law No. 7 of 1984 on the Ratification of CEDAW.</li> <li>- Law No. 39 of 1999 on Human Rights.</li> <li>- Law No. 12 of 2022 on Sexual Violence Crimes</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                             | Identify potentially adverse gender-specific risks and impacts of the Project that have a disproportionate impact on one gender compared to another, consider how the Project's risks and impacts may increase those gender-specific risks and impacts and develop mitigation measures to mitigate them                                                        | National regulations provide general provisions on gender equality, non-discrimination, women's rights, and protection from sexual violence, but do not explicitly require systematic assessment and mitigation of Project-specific gender-related risks and disproportionate impacts as required by AIIB ESS 1. | Gender analysis will be incorporated into the ESIA process. A <b>Gender Action Plan (GAP)</b> will be prepared to address gender-related risks, promote inclusive participation, and monitor gender-disaggregated outcomes.                                             |
| <b>Health and Safety of Workers and Communities – Health and Safety</b> | <ul style="list-style-type: none"> <li>- Government Regulation Number 50 of 2012 concerning the Implementation of Occupational Health and Safety Management System</li> <li>- Regulation of the Minister of Public Works and Public Housing Number 10 of 2021 concerning Guidelines for Construction Safety Management Systems</li> <li>- Government Regulation No. 30 of 2021 concerning Road Traffic and Transportation, includes traffic impact analysis (ANDALALIN) requirements for projects that have the potential to disrupt the security, safety, order, and flow of road traffic.</li> </ul> | Assess health and safety risks to Project workers and communities affected by the Project. For such workers and communities, implement measures to prevent accidents, injuries, and illnesses (including, as appropriate, measures to avoid or minimize exposure to infectious and noncommunicable diseases, including pandemics) associated with the Project. | National regulations do not comprehensively address community exposure to infectious diseases, waterborne diseases, or emergency public health risks associated with Project activities.                                                                                                                         | The Project will implement Community Health and Safety measures consistent with AIIB ESF and WBG EHS Guidelines, including infection prevention and control protocols, emergency preparedness, traffic safety <b>management, and public health awareness measures</b> . |

| Aspect                                             | National Regulatory Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | AIIB ESF Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | GAPS                                                                                                                                                                                                             | Approach in this ESIA                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Occupational Health and Safety – Health and Safety | <ul style="list-style-type: none"> <li>- Law Number 1 of 1970 concerning Occupational Health and Safety (OHS) Management</li> <li>- Regulation of the Ministry of Manpower Number 5 of 2018 concerning Occupational Health and Safety (OHS) Standards for Workers and the Work Environment</li> <li>- Regulation of the General Minister Manpower and Housing No. 10 of 2021 on Guidelines for Construction Safety Management System</li> <li>- Minister of Public Works and Public Housing Instruction No. 02/IN/M/2020 on Protocols to prevent the spread of Coronavirus disease 2019 (COVID-19) in Construction Services.</li> </ul> | In addition to the general provisions above, implement the following measures designed to provide safe and healthy working conditions to Project workers                                                                                                                                                                                                                                                                                                                                                                         | Indonesian regulations substantially address occupational health and safety requirements; however, alignment with international good practices and contractor management requirements may require strengthening. | The Project will implement <b>Occupational Health and Safety measures</b> consistent with Indonesian regulations, AIIB ESF, and WBG EHS Guidelines, including worker training, PPE use, emergency preparedness, incident reporting, and contractor OHS supervision.                                                                                                                                       |
| The entry of the workforce – Health and Safety     | K3 regulations in Indonesia do not include SEA/SH risk prevention.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Assess and manage the risk of adverse impacts on society that may result from the temporary labour flow caused by the Project. Where such risks may exist, apply the following principles to be applied by the Client: (a) seek to avoid or minimize labor flows by utilizing local labor whenever possible; and (b) assess and manage labour inflow risks (including the risk of disease transmission or GBV or sexual exploitation and harassment (SEA)) on appropriate instruments, depending on risk factors and their level | Indonesian regulations do not specifically require assessment and management of labor influx-related SEA/SH risks.                                                                                               | The Project will prepare and implement a Labor Management Procedure (LMP) and Workforce Management Plan, including: <ul style="list-style-type: none"> <li>- prioritization of local labor where feasible;</li> <li>- worker Codes of Conduct;</li> <li>- SEA/SH awareness training;</li> <li>- community awareness programs; and</li> <li>- grievance mechanisms for workers and communities.</li> </ul> |
| Building Security – Health and Safety              | Law No. 28 of 2002 concerning Buildings.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | When the Project includes new buildings and structures accessible to members of the public, <b>consider the additional</b>                                                                                                                                                                                                                                                                                                                                                                                                       | National regulations address general building safety but do not explicitly require assessment of additional risks to public users                                                                                | Integrate building design risk assessments for natural hazards and operational accidents into the project                                                                                                                                                                                                                                                                                                 |

| Aspect                                                    | National Regulatory Requirement                                                                                                                                                                                                 | AIIB ESF Requirement                                                                                                                                                                                                                                                                                                                                                                        | GAPS                                                                                                                                                                                                                                                                                                                 | Approach in this ESIA                                                                                                                                                                                                                |
|-----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                           |                                                                                                                                                                                                                                 | <b>risks</b> of potential public exposure to operational accidents or natural hazards, including extreme weather events                                                                                                                                                                                                                                                                     | from operational accidents and natural hazards, including extreme weather events, as required by the AIIB ESF                                                                                                                                                                                                        | planning process. Safety measures such as early warning systems, emergency exits, fire prevention systems, and climate-resistant features should be adopted in line with international best practices and AIIB requirements.         |
| Traffic and Road Safety – Health and Safety               | Law Number 22 of 2009 concerning Road Traffic and Transportation.                                                                                                                                                               | Identify, evaluate, and monitor traffic and road safety risks for Project workers and affected communities during the Project Life Cycle, develop measures and plans to address them, and incorporate technically and financially feasible road safety components into the Project design, where applicable, to prevent and mitigate potential road safety impacts on affected communities. | National regulations address road traffic and transportation safety but do not explicitly require comprehensive assessment and monitoring of Project-related traffic and road safety risks throughout the Project Life Cycle or integration of road safety measures into Project design, as required by the AIIB ESF | Develop and implement <b>Traffic Impact Analysis</b> as part of the project.                                                                                                                                                         |
| Security personnel – Health and Safety                    | No requirements in national regulations                                                                                                                                                                                         | When a Project worker is assigned to provide security to protect Client's personnel and property (Project security worker), assess the risks posed by these security arrangements to people inside and outside the Project site                                                                                                                                                             | National regulations do not specifically require assessment of human rights risks associated with Project security personnel.                                                                                                                                                                                        | The Project will establish procedures for recruitment, training, supervision, and conduct of security personnel consistent with AIIB ESF principles and proportional use of force requirements.                                      |
| Labor Management Relations – Labor and Working Conditions | <ul style="list-style-type: none"> <li>- Law Number 11 of 2020 concerning Manpower</li> <li>- Law on Creation Number 13 of 2003 concerning Workforce Law Number 20 of 2023 concerning State Civil Affairs Apparatus.</li> </ul> | Provide a good labor management relations system for Project workers, which includes the following, consistent with relevant national legislation                                                                                                                                                                                                                                           | National regulations address employment relationships and workers' rights but do not explicitly require a comprehensive labor management relations system covering worker grievance mechanisms, non-discrimination, and regular worker–management                                                                    | The project will establish workforce management procedures (LMPs) that are consistent with AIIB ESS2. This will include clear job requirements, a working grievance mechanism for workers, an antidiscrimination policy, and regular |

| Aspect                                                                                                               | National Regulatory Requirement                                                                                                                                                                                                                                                                                                                            | AIIB ESF Requirement                                                                                                                                                                                                                                                                                                                                                                               | GAPS                                                                                                                                                                                                                                                                                             | Approach in this ESIA                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                    | communication as required by AIIB ESS 2                                                                                                                                                                                                                                                          | communication between workers and management.                                                                                                                                                                                                                                                                                                  |
| Civil Servants - Labor and Working Conditions                                                                        | No requirements in national regulations.                                                                                                                                                                                                                                                                                                                   | If government civil servants are employed in connection with the Project (either full-time or part-time) and they remain subject to the terms and conditions of existing public sector employment agreements and relevant national laws applicable to civil servants                                                                                                                               | National regulations do not provide specific guidance for civil servants working on externally funded projects; there are no provisions that ensure that ESS2 protections (e.g., equal treatment, access to complaints, health and safety) are extended to seconded or part-time civil servants. | The Project will ensure that civil servants involved in the Project are covered by the same manpower management and OHS measures as other workers, in line with AIIB ESS2. Their involvement will be documented, and they will be informed of their rights, responsibilities, and access to the <b>Project's grievance redress mechanism</b> . |
| Child Labor and Forced Labor - Child Labor and Working Conditions                                                    | <ul style="list-style-type: none"> <li>- Law Number 13 of 2003 concerning Manpower as amended by Law Number 11 of 2020 concerning Omnibus Law and Law</li> <li>- Number 21 of 2007 concerning the Eradication of Human Trafficking has regulated the prohibition of the use of child labor and forced labor.</li> </ul>                                    | <p>To protect children from harm to their health, safety, and morale, take all necessary measures to prevent children under the age of 18 from being employed to work under the Project.</p> <p>Forced labor. Take all necessary measures in connection with the Project so that no work or services not performed voluntarily are demanded of a person under threat of violence or punishment</p> | Employers are generally prohibited from hiring children under the age of 18. However, a child between the ages of 13 and 15 can do light work, as long as the work does not interfere with him physically, mentally, or socially welfare and development.                                        | As this project is related to construction activities that pose <b>fundamental risks related to health and safety</b> in the workplace, persons under the age of 18 will not be involved in the execution of any project work.                                                                                                                 |
| Loss of access to assets or resources or land use restrictions - Land Acquisition and Voluntary Resettlement (ESS 2) | <ul style="list-style-type: none"> <li>- Law Number 2 of 2012 concerning Land Acquisition for Development in Public Interest as amended by Law No. 6 of 2023 the amendment of the Job Creation Law</li> <li>- Government Regulation No. 39 2023 on Government Amendments</li> <li>- Regulation No. 19 of 2021 concerning Implementation of Land</li> </ul> | If adverse environmental, social or economic impacts of Project activities involve loss of access to assets or resources or land use restrictions, identification of impacts to be avoided, or when avoidance is not feasible, at least minimized, reduced, or compensated, through                                                                                                                | While existing regulations such as Law No. 2/2012 and related amendments provide a framework for land acquisition and social impact management, the emphasis is limited to identifying, avoiding, or minimizing partial or temporary restrictions on land use or access to resources,            | Improve screening processes to identify direct and indirect project impacts on land access and resource use, including those affecting informal users. Prioritize avoidance and minimization of impacts through initial project design and stakeholder engagement.                                                                             |

| Aspect                                                                            | National Regulatory Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | AIIB ESF Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | GAPS                                                                                                                                                                                                                                                                                                                                                                        | Approach in this ESIA                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                   | <p>Acquisition for Development in the Public Interest</p> <ul style="list-style-type: none"> <li>- Government Regulation No. 2 of 2015 concerning the Handling of Social Conflicts</li> <li>- Regulation of the Minister of ATR/BPN (MAA) No. 19/2021 concerning Technical Implementation of Land Acquisition for Development for the Public Interest</li> <li>- Presidential Decree Number 62 Year 2018 on the Social Impact Handling in the Land Acquisition Process for National Development</li> <li>- Presidential Decree No. 78 of 2023 on Amendments to Presidential Decree Number 62 Year 2018 on the Social Impact Handling in the Land Acquisition Process for National Development</li> </ul> | environmental and social assessments                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p>especially for informal users or vulnerable groups.</p> <p>Compensation will be provided to eligible people under Presidential Regulation No. 78/2023, which requires at least 10 years of continuous land use, done in good faith and recognized by the landowner or local village head. This will be treated as a living document and Action Plan in LARAP report.</p> | <p>Provide clear guidelines and mechanisms for grant support and/or livelihood restoration for all affected parties, not just legal landowners.</p> <p>Ensure an inclusive consultation process with those affected by land-use restrictions, especially vulnerable and marginalized groups. Monitor and evaluate the effectiveness of <b>mitigation measures, with corrective actions taken</b> as needed.</p> |
| Grievance Redress Mechanism - Land Acquisition and Voluntary Resettlement (ESS 2) | <p>Employment - related complaints are managed through unions or through mechanisms described in individual workers' contracts. Such mechanisms often do not allow anonymity and are likely Inaccessible to contractors, subcontractor workers, part-time workers, and other vulnerable workers.</p> <p>-</p>                                                                                                                                                                                                                                                                                                                                                                                            | <p>Under AIIB ESF 2, project executing agency is mandated to prepare an appropriate Project-level GRM to receive and facilitate the resolution of concerns and complaints of people who believe they have been affected by the environmental or social impact of the Project. In this case, tenants of hospital who will be relocated along with the relocation activity of the project. The GRM must be prepared to provide a safe channel for tenants to lodge their complaint incorporating</p> | <p>National requirements for GRMs for employment-related issues have not ensured there are various channels through which workers can lodge their grievances conveniently and in a timely manner.</p>                                                                                                                                                                       | <p>Appropriate <b>Project-level GRM</b> to receive and facilitate the resolution of concerns and complaints of people who believe they have been adversely affected.</p>                                                                                                                                                                                                                                        |

| Aspect                                                                                                   | National Regulatory Requirement                                                                                                                                                                                           | AIIB ESF Requirement                               | GAPS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Approach in this ESIA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                          |                                                                                                                                                                                                                           | anonymity, worker-specific channels                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Stakeholders engagement and Information Disclosure - Land Acquisition and Voluntary Resettlement (ESS 2) | <ul style="list-style-type: none"> <li>- Law Number 14 of 2008 concerning Public Information Disclosure</li> <li>- Government Regulation Number 22 of 2021 concerning Environmental Protection and Management.</li> </ul> | Stakeholders engagement and Information Disclosure | National regulations require public disclosure during environmental permitting processes; however, continuous stakeholder engagement throughout the Project lifecycle is not comprehensively regulated. In addition, Indonesian regulations do not specify minimum public disclosure periods prior to project approval, whereas the AIIB ESF requires the draft ESIA (or equivalent environmental and social documentation) to be disclosed at least 30 days prior to AIIB Board consideration for Category B projects and at least 60 days for Category A projects | <p>A <b>Stakeholder Engagement Plan</b> (SEP) will be prepared and implemented to ensure timely disclosure of Project information, meaningful consultations, accessible grievance mechanisms, and inclusive participation of affected communities and vulnerable groups throughout the Project lifecycle.</p> <p>Stakeholder Engagement Plan (SEP) will be implemented to ensure timely disclosure information, meaningful consultations, accessible grievance mechanism and the inclusion of vulnerable groups throughout the project lifecycle.</p> |

### 3 PROJECT DESCRIPTION

#### 3.1 Description of Existing Facilities

##### 3.1.1 Development of Dr. H. Marzoeki Mahdi Hospital

Dr. H. Marzoeki Mahdi Hospital in Bogor (RSMM) is one of the hospitals in the city of Bogor that was originally the Bogor Central Mental Hospital, established in 1882 by the Dutch East Indies Government under the original name *Krankzinniggestich te Buitenzorg* (Bogor Central Mental Hospital). The existence of the Bogor Central Mental Hospital was officially established in 1978 through Minister of Health Decree No. 135/MENKES/SK/IV/1978 dated April 28, 1978, regarding the Organizational Structure and Operational Procedures of the Bogor Central Mental Hospital.

On April 10, 2002, based on Minister of Health Decree No. 266/MENKES/SK/IV/2002, the Bogor Central Psychiatric Hospital was renamed the dr. H. Marzoeki Mahdi Hospital (RSMM) Bogor and simultaneously expanded its services to include substance abuse treatment and general health care. This expansion of services was driven by the growing public need for both psychiatric and non-psychiatric healthcare services (RSMM Bogor Website, 2019).

According to Minister of Health Regulation No. 34 of 2017 on Hospital Accreditation, Dr. H. Marzoeki Mahdi Hospital in Bogor has been granted an Extension of Operating license as a Class A Specialized Psychiatric Hospital No. HK.02.03/I/4246/2015. Additionally, Dr. H. Marzoeki Mahdi Hospital in Bogor is currently providing general healthcare services pursuant to the Decision of the Director General of Medical Services Development, Ministry of Health of the Republic of Indonesia, No. HK. 03.05/I/440/09 dated February 16, 2009, regarding the Permit to Provide General Health Services at Dr. H. Marzoeki Mahdi Hospital in Bogor, wherein the general health services provided are equivalent to those of a Class C General Hospital.

In its operations, Dr. H. Marzoeki Mahdi Hospital (RSMM) Bogor has demonstrated compliance in the field of environmental management by holding the UKL-UPL environmental documents and has obtained UKL-UPL Recommendation No. 660.1/55-DLHK/2006 in 2006 from Bogor City Environmental Agency, Environmental Feasibility Decision No. 660.1.45/160-DLH in 2019 from Bogor City Environmental Agency, and Environmental Feasibility Decision No. 492 of 2024 from the Ministry of Environment and Forestry.

Currently, Dr. H. Marzoeki Mahdi Hospital in Bogor has become a referral hospital for Jamkesmas and Jamkesda services, accounting for 61% of the total service volume. The areas covered by Jamkesda services include the City and Regency of Bogor; the City of

Depok; the City and Regency of South Tangerang; the Province of DKI Jakarta; Karawang Regency; Indramayu Regency; the City of Cirebon; Cianjur Regency; and the City and Regency of Sukabumi. In addition, Dr. H. Marzoeki Mahdi Hospital in Bogor accepts Social Health Insurance and Corporate Insurance.

### 3.1.2 Detailed Description of Existing Hospital Facilities

Dr. H. Marzoeki Mahdi Psychiatric Hospital covers land area of 387,419 m<sup>2</sup> according to Certificate of Land Ownership (*Sertifikat Hak Milik/SHM*) No. 142 year 2016, and a building area of 50,566 m<sup>2</sup>. Details on the existing facilities are shown in the following table.

**Table 3.1. Details of the Land Area and Existing Buildings at RSMM**

| No.                | Building Name                        | Main Function | Construction Year | Size (m <sup>2</sup> ) | Building Condition |
|--------------------|--------------------------------------|---------------|-------------------|------------------------|--------------------|
| <b>I. Building</b> |                                      |               |                   |                        |                    |
| 1                  | Gd. Dapur & Adm. Detox Napza         | Service       | 2004              | 212                    | Severely Damaged   |
| 2                  | Rumah Tangga - Gudang                | Supporting    | 1882              | 1011                   | Good               |
| 3                  | Ins. Gizi Pasien Jiwa                | Supporting    | 1882              | 711                    | Good               |
| 4                  | R. Binatu / Laundry                  | Supporting    | 1882              | 400                    | Good               |
| 5                  | R. Steam Boiler                      | Supporting    | 1882              | 98                     | Good               |
| 6                  | R. IPAL                              | Supporting    | 2000              | 51                     | Good               |
| 7                  | Ruang Informasi Depan                | Service       |                   | 72                     | Good               |
| 8                  | Ruang EDP                            | Service       | 2007              | 38                     | Good               |
| 9                  | Ruang Laboratorium                   | Service       | 2007              | 68                     | Good               |
| 10                 | Tumbuh Kembang Anak (Psikologi Anak) | Service       | 1882              | 258                    | Good               |
| 11                 | Ruang Rekam Medik                    | Supporting    |                   | 392                    | Good               |
| 12                 | Kantor Administrasi Pasien           | Supporting    | 2011              | 113                    | Good               |
| 13                 | Keswamas Lama                        | Supporting    | 1882              | 360                    | Good               |
| 14                 | Gedung Arsip                         | Supporting    | 1882              | 167                    | Good               |
| 15                 | Gedung KPPA                          | Supporting    | 1882/2004         | 1623                   | Good               |
| 16                 | Gedung Diklit                        | Service       |                   | 537                    | Good               |
| 17                 | Bidang Keperawatan                   | Supporting    | 1881              | 394                    | Good               |
| 18                 | Showroom IPSRS                       | Supporting    | 1882              | 93                     | Good               |
| 19                 | Showroom IPSRS                       | Supporting    | 1882              | 127                    | Good               |
| 20                 | Gedung Galeri Kresna                 | Service       | 1882              | 1138                   | Good               |
| 21                 | Spool Hook                           | Supporting    | 1882              | 3                      | Good               |
| 22                 | Gudang Ex. Murai                     | Supporting    | 2006              | 363                    | Good               |
| 23                 | Ex. Gudang Obat                      | Supporting    | 1882              | 46                     | Good               |
| 24                 | Ex. Gudang Lat Kayu dan Anyaman      | Supporting    | 1882              | 477                    | Severely Damaged   |
| 25                 | Ex. Gudang Pelatihan Ot              | Supporting    | 1882              | 294                    | Severely Damaged   |

| No. | Building Name                                  | Main Function | Construction Year | Size (m <sup>2</sup> ) | Building Condition |
|-----|------------------------------------------------|---------------|-------------------|------------------------|--------------------|
| 26  | Ex. Gudang Pengelasan & Batako                 | Supporting    | 1882              | 558                    | Severely Damaged   |
| 27  | Ex. Garasi Traktor Depan Diklat                | Service       | 1882              | 40                     | Severely Damaged   |
| 28  | Ruang Fisioterapi (Rehabilitasi Medik)         | Service       | 2007              | 263                    | Good               |
| 29  | Medical Check-up                               | Service       | 2007              | 159                    | Good               |
| 30  | Ruang Nurse Station Antasena                   | Service       | 2007              | 356                    | Good               |
| 31  | NICU & Nurse Station Bisma                     | Service       | 2008              | 189                    | Good               |
| 32  | Poli Pita Aruna                                | Service       | 2008              | 200                    | Good               |
| 33  | CSSD Samping Lab                               | Supporting    | 2008              | 130                    | Good               |
| 34  | Ruang Antasena                                 | Service       | 1882              | 813                    | Good               |
| 35  | Candradimuka S.D SIRS                          | Service       | 1882              | 1800                   | Good               |
| 36  | TPP S.D Poli Gigi                              | Service       | 1882              | 765                    | Good               |
| 37  | Gedung Poli Spesialis                          | Service       | 1882              | 1090                   | Good               |
| 38  | Hemodialisa                                    | Service       | 1882              | 707                    | Good               |
| 39  | Gedung Parikesit S.D ICU Umum                  | Service       | 1882              | 937                    | Good               |
| 40  | EEG                                            | Service       | 1882              | 249                    | Good               |
| 41  | Dewi Kunti - R. Kebidanan (Vk) & Perina (Bayi) | Service       | 1882              | 704                    | Good               |
| 42  | R. Antasena (Ex. Depo Obat)                    | Service       | 1882              | 47                     | Good               |
| 43  | Bisma                                          | Service       | 2008              | 223                    | Good               |
| 44  | Ruang Tunggu ICU Umum                          | Service       | 2008              | 29                     | Good               |
| 45  | Jatayu                                         | Service       | 2007              | 939                    | Good               |
| 46  | Basudewa                                       | Service       | 2011              | 1060                   | Good               |
| 47  | Penambahan Luas Bisma - parikesit              | Service       | 2008              | 17                     | Good               |
| 48  | Rama I S.D IV                                  | Service       | 1882              | 1828                   | Good               |
| 49  | Instalasi laboratorium                         | Supporting    | 1882              | 226                    | Good               |
| 50  | IGD Umum                                       | Service       | 2008              | 650                    | GOod               |
| 51  | OK/Operasi Bedah                               | Service       | 2006              | 409                    | Good               |
| 52  | Gedung Pemping (Isolasi Covid-19)              | Service       | 1882              | 220                    | Good               |
| 53  | Gedung PSIKOGERIATRI (ISMAYA)                  | Service       | 2021              | 800                    | Good               |
| 54  | Wisma Shinta                                   | Service       | 1882              | 548                    | Good               |
| 55  | R. yudistira                                   | Service       | 1882              | 556                    | Good               |
| 56  | Gedung Rehabilitasi Psikososial                | Service       | 1882              | 548                    | Good               |
| 57  | R. Sadewa                                      | Service       | 1882              | 548                    | Good               |
| 58  | Pemulasaran Jenazah                            | Supporting    | 1882              | 170                    | Good               |
| 59  | R. Arimbi                                      | Service       | 1882              | 397                    | Good               |
| 60  | R. Drupadi                                     | Service       | 1882              | 196                    | Good               |
| 61  | R. Utari                                       | Service       | 1882              | 675                    | Good               |

| No. | Building Name                            | Main Function | Construction Year | Size (m <sup>2</sup> ) | Building Condition |
|-----|------------------------------------------|---------------|-------------------|------------------------|--------------------|
| 62  | R. Gatot Kaca (Kresni)                   | Service       | 1882              | 1142                   | Good               |
| 63  | R. Saraswati                             | Service       | 1882              | 752                    | Good               |
| 64  | R. Subadra                               | Service       | 1882              | 450                    | Good               |
| 65  | R. Dewi Amba (I - II - III)              | Service       | 1882              | 641                    | Good               |
| 66  | Antareja                                 | Service       | 1882              | 276                    | Good               |
| 67  | R. Abimanyu                              | Service       | 1882              | 334                    | Good               |
| 68  | Kafe Rehabilitasi                        | Supporting    | 1882              | 78                     | Good               |
| 69  | R. Penjahitan Upf Rehabilitasi           | Supporting    | 1882              | 477                    | Good               |
| 70  | Poli Psikiatri Terpadu S.D MPKP Srikandi | Service       | 1882              | 2186                   | Good               |
| 71  | Bratasena                                | Service       | 1882              | 506                    | Good               |
| 72  | Ruang Poli Psikiatri Baru                | Service       | 2007              | 326                    | Good               |
| 73  | Dewi Sri                                 | Service       | 1882              | 60                     | Good               |
| 74  | Ruang UGD Jiwa (R. Dokter/Perawat/Mod)   | Service       | 1882              | 27                     | Good               |
| 75  | VIP MPKP                                 | Service       | 1882              | 66                     | Good               |
| 76  | Gedung Pelayanan PHCU RSJMM              | Service       | 1882              | 1250                   | Good               |
| 77  | Masjid Nurul Ikhlas                      | Supporting    | 1882              | 159                    | Good               |
| 78  | Mushola Al-Hidayah                       | Supporting    | 1996              | 741                    | Good               |
| 79  | Gedung Serba Guna (BGC)                  | Supporting    |                   | 310                    | Good               |
| 80  | Gedung Club House (BGC)                  | Supporting    |                   | 1050                   | Good               |
| 81  | Madrasah Nurul Ikhlas                    | Supporting    | 1882              | 120                    | Good               |
| 82  | Kantor Koperasi                          | Supporting    | 1882              | 83                     | Good               |
| 83  | Kantin Koperasi                          | Supporting    | 2002              | 294                    | Good               |
| 84  | Kantin Sehat RSJMM X Bank BJB            | Supporting    |                   | 15                     | Good               |
| 85  | Pos Satpam Lama                          | Supporting    | 1998              | 6                      | Good               |
| 86  | R. Satpam Baru                           | Supporting    | 2008              | 4                      | Good               |
| 87  | Pos Satpam Nakula                        | Supporting    | 2008              | 7                      | Good               |
| 88  | Pos Satpam SPMG IPAL                     | Supporting    | 2008              | 7                      | Good               |
| 89  | Garasi Mobil Dinas                       | Supporting    | 2015              | 93                     | Good               |
| 90  | Garasi Pool Kendaraan Operasional        | Supporting    | 2015              | 354                    | Good               |
| 91  | Selasar Poli Psikiatri Baru              | Supporting    | 1882              | 15                     | Good               |
| 92  | Selasar Subadra - Dewi Amba              | Supporting    | 1882              | 48                     | Good               |
| 93  | Selasar Rumah Sakit                      | Supporting    | 1882              | 1296                   | Good               |
| 94  | Selasar Bangau - Nurse Station           | Supporting    | 1882              | 64                     | Good               |
| 95  | Selasar Bisma - Parikesit                | Supporting    | 1882              | 69                     | Good               |
| 96  | R. IPSRS Baru                            | Supporting    | 1882              | 135                    | Good               |
| 97  | R. Kompresor - R. OK                     | Supporting    | 2007              | 13                     | Good               |
| 98  | Power House                              | Supporting    | 2007              | 108                    | Good               |
| 99  | Gardu Listrik                            | Supporting    | 2008              | 25                     | Good               |

| No.                                       | Building Name                            | Main Function | Construction Year | Size (m <sup>2</sup> ) | Building Condition |
|-------------------------------------------|------------------------------------------|---------------|-------------------|------------------------|--------------------|
| 100                                       | Gardu PLN (5x5) Type 7 R2                | Supporting    | 2009              | 25                     | Good               |
| 101                                       | Bangunan Rumah Duka (45% Pekerjaan)      | Supporting    |                   | 1911                   | Good               |
| 102                                       | Ruang ATM                                | Supporting    | 2009              | 18                     | Good               |
| 103                                       | Bangunan Green House                     | Supporting    |                   | 200                    | Good               |
| 104                                       | Bangunan Ruang Oksigen Generator 6x8x5 M | Supporting    | 2021              | 48                     | Good               |
| 105                                       | Gedung Parkiran Depan                    | Supporting    | 2014              | 399                    | Good               |
| 106                                       | Gedung Parkir Belakang                   | Supporting    | 2016              | 72                     | Good               |
| 107                                       | Wisma Dharmawanita                       | Supporting    | 1882              | 147                    | Good               |
| 108                                       | Asrama Waluya I                          | Supporting    | 1882              | 576                    | Good               |
| 109                                       | Asrama Waluya II                         | Supporting    | 1882              | 416                    | Good               |
| 110                                       | Aspura Manunggal                         | Supporting    | 1882              | 240                    | Good               |
| 111                                       | Wisma Nuri                               | Supporting    | 1882              | 416                    | Good               |
| 112                                       | Aspuri Dekat Ins. Gizi Ps. Jiwa          | Supporting    | 1882              | 200                    | Good               |
| 113                                       | Asrama Trisakti                          | Supporting    | 1882              | 858                    | Good               |
| 114                                       | ASRAMA PUTRI (Dekat Masjid Nurul Ikhlas) | Supporting    | 1882              | 200                    | Good               |
| 115                                       | Asrama Cendrawasih                       | Supporting    | 1882              | 457                    | Good               |
| 116                                       | Pagar BRC                                | Supporting    |                   | *204                   | Good               |
| 117                                       | Pagar BRC                                | Supporting    |                   | *83                    | Good               |
| 118                                       | Pagar Besi Permanen                      | Supporting    |                   | *70                    | Good               |
| 119                                       | Pagar Tembok Depan                       | Supporting    |                   | *224                   | Good               |
| 120                                       | Pagar Tembok Belakang                    | Supporting    |                   | *679                   | Good               |
| 121                                       | Pagar Besi Lapangan Sepak Bola           | Supporting    |                   | *205                   | Good               |
| 122                                       | Pagar Lapangan Golf                      | Supporting    |                   | *1239                  | Good               |
| <b>Total Size of Building</b>             |                                          |               |                   | <b>50.566</b>          |                    |
| <b>II. Open Space</b>                     |                                          |               |                   |                        |                    |
| 1                                         | Lapangan Parkir                          |               |                   | 88.076                 |                    |
| 2                                         | Ruang Terbuka Hijau                      |               |                   | 240.717                |                    |
| <b>Total Size of Open Space</b>           |                                          |               |                   | <b>328.793</b>         |                    |
| <b>Total Size (Building + Open Space)</b> |                                          |               |                   | <b>379.359</b>         |                    |

Source: RS dr. H. Marzoeki Mahdi, 2026

Note: \* = length in m, not area (m<sup>2</sup>)

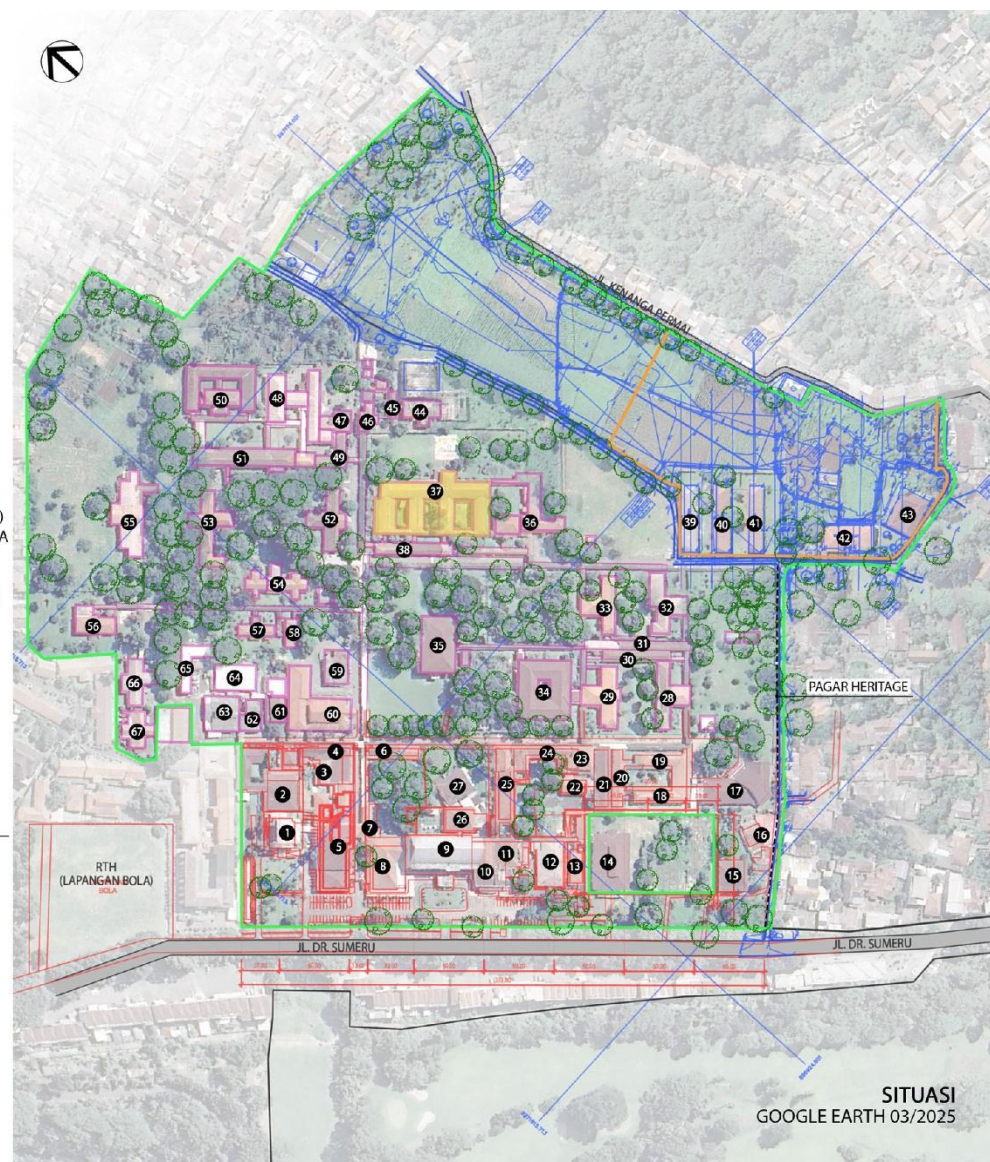
Existing hospital building and facilities layout can be viewed in the following figure.

**LEGEND**

- |                                     |                                         |
|-------------------------------------|-----------------------------------------|
| 1 : POLI TERPADU                    | 34 : UIIP PRIA & WANITA                 |
| 2 : RAWAT INAP SRIKANDI             | 35 : KPPA (KANTOR)                      |
| 3 : CSSD                            | 36 : RAWAT INAP JIWA JATAYU             |
| 4 : LABORATORIUM                    | 37 : RAWAT INAP JIWA RAMA (NAPZA)       |
| 5 : MEDICAL CHECKUP VIP + RADIOLOGI | 38 : KPRS / KESWAMA                     |
| 6 : POLI UMUM / MCU / EEG           | 39 : ASRAMA WALUYA 2                    |
| 7 : SLEEP STUDY                     | 40 : ASRAMA WALUYA 3                    |
| 8 : POLI GIGI / APOTIK              | 41 : ASRAMA NURI                        |
| 9 : POLI SPESIALIS UMUM             | 42 : DIKLAT                             |
| 10 : IGD                            | 43 : DIKLAT CENDRAWASIH                 |
| 11 : OK                             | 44 : MURAI                              |
| 12 : HEMODIALISA                    | 45 : KESLING                            |
| 13 : ADMINISTRASI PASIEN            | 46 : KAMAR JENAZAH                      |
| 14 : GRAHA ISMAYA                   | 47 : IPSRS                              |
| 15 : RUMAH DINAS TERBENGKALAI       | 48 : RAWAT INAP JIWA DRUPADI            |
| 16 : MASJID 1                       | 49 : RAWAT INAP JIWA ARIMBI             |
| 17 : RAWAT INAP UMUM BASUDEWA       | 50 : RAWAT INAP JIWA UTARI              |
| 18 : RAWAT INAP GAYATRI             | 51 : RAWAT INAP JIWA GATOT KACA (UIIP)  |
| 19 : RAWAT INAP ANTASENA            | 52 : RAWAT INAP JIWA SUBADRA (PRIA)     |
| 20 : RAWAT INAP ANTASENA            | 53 : RAWAT INAP JIWA SARASWATI (LANSIA) |
| 21 : RAWAT INAP BISMA               | 54 : RAWAT INAP JIWA DEWI AMBA DEWASA   |
| 22 : NURSE STATION                  | 55 : RAWAT INAP JIWA BRATASENA          |
| 23 : ICU                            | 56 : RAWAT INAP JIWA ANTAREJA           |
| 24 : PARIKESIT                      | 57 : RAWAT INAP JIWA DEWI AMBA (ANAK)   |
| 25 : VK / PERINA                    | 58 : GEDUNG ARSIP                       |
| 26 : REKAM MEDIS                    | 59 : KANTIN & TOKO KOPERASI             |
| 27 : MASJID 2                       | 60 : GEDUNG PERTEMUAN EX KRESNA         |
| 28 : RAWAT INAP JIWA SADEWA         | 61 : GUDANG BARAT RT & FARMASI          |
| 29 : RAWAT INAP JIWA SHINTA         | 62 : BOILER                             |
| 30 : ASRAMA KOAS / RESIDEN          | 63 : GIZI                               |
| 31 : GEDUNG REHABILITASI            | 64 : LAUNDRY                            |
| 32 : GEDUNG REHABILITASI SOSIAL     | 65 : POL KENDARAAN                      |
| 33 : RAWAT INAP YUDISTIRA           | 66 : RAWAT INAP JIWA ABIMANYU           |
|                                     | 67 : RAWAT INAP PEMPING                 |

- DATA UKUR TOPOGRAFI GENE BANK
- DATA GAMBAR EKSISTING RSMM
- DATA BANGUNAN EKSISTING GOOGLE EARTH
- BANGUNAN HERITAGE
- POHON BESAR EKSISTING

**MASTERPLAN**  
**RS MARZOEKI MAHDI**  
 BOGOR



**Figure 3.1. Existing Hospital Building and Facilities Layout**

### 3.1.3 Existing Hospital Services and Activities

#### Core Activities

#### a. Emergency Installation Services (IGD)

The Emergency Department operates 24 hours a day, 7 days a week, without interruption. Activities carried out in the Emergency Department include patient triage and the provision of emergency care, such as resuscitation, medical emergencies, and other emergencies, including pediatric and obstetric emergencies, psychiatric emergencies, and drug-related emergencies. The IGD service system utilizes a triage system; the medical emergency triage system is used to determine which patients should be treated first compared to others. The basic concept of emergency triage is to categorize patients into three groups: immediate, urgent, and non-urgent. The emergency triage system involves grouping patients based on the severity of their condition, prognosis, and the likelihood of a successful outcome, in accordance with established IGD service standards.

#### b. Outpatient Installation Services (*Rawat Jalan*)

Outpatient services at the PKJN Marzoeki Mahdi Hospital are divided into four types of medical services:

1. Specialist Outpatient Clinics (Psychiatric and Non-Psychiatric)
2. General Clinic
3. Psychology Clinic
4. Medical Check-Up

The Psychiatry Outpatient Clinic consists of Adult Psychiatry, Child & Adult Psychiatry, Psychogeriatric Clinic, Anxiety and Depression Clinic, CLP Clinic, Psychology Clinic, Assessment Center, Nursing, NAPZA Clinic, and HIV/VCT/PMTCT Clinic.

Meanwhile, the Non-Psychiatric Outpatient Clinics consist of the Neurology Clinic, Internal Medicine Clinic, Cardiology & Vascular Clinic, Integrated Diabetes Clinic, Pediatrics Clinic, ENT Clinic, Ophthalmology Clinic, Pulmonology Clinic, Obstetrics & Gynecology Clinic, Surgery Clinic, Dermatology Clinic, Occupational Therapy Clinic, and Dental & Oral Clinic.

**Table 3.2. Number of Patients/Visitors at the PKJN of Marzoeki Mahdi Hospital in 2025**

| No. | Group              | Month of Visit (2025) |      |      |      |      |      |
|-----|--------------------|-----------------------|------|------|------|------|------|
|     |                    | Jul                   | Aug  | Sep  | Oct  | Nov  | Dec  |
| 1   | Outpatient Visitor | 10145                 | 9040 | 9400 | 9429 | 8840 | 9882 |

| No.   | Group                                | Month of Visit (2025) |       |       |       |       |       |
|-------|--------------------------------------|-----------------------|-------|-------|-------|-------|-------|
|       |                                      | Jul                   | Aug   | Sep   | Oct   | Nov   | Dec   |
| 2     | Outpatient Visits                    | 11279                 | 9782  | 9877  | 10414 | 9594  | 10967 |
| 3     | Patient admitted for inpatient care  | 765                   | 709   | 764   | 758   | 718   | 755   |
| 4     | Patient discharged from the hospital | 751                   | 698   | 784   | 757   | 711   | 711   |
| Total |                                      | 22940                 | 20229 | 20825 | 21358 | 19863 | 22375 |

Source: PKJN RS Marzoeqi mahdi, 2025

c. Inpatient Installation Services (*Rawat Inap*)

Inpatient services are divided into three categories based on their function:

Psychiatric Services, Substance Abuse Services, and General Services.

**Table 3.3. Inpatient Services at Marzoeqi Mahdi Hospital**

| No. | Inpatient Services                              | Description                                                    |
|-----|-------------------------------------------------|----------------------------------------------------------------|
| 1   | Psychiatric inpatient care                      | Inpatient ward for patients with mental health disorders       |
| 2   | Inpatient treatment for substance abuse (NAPZA) | Inpatient rooms for patients addicted to drugs or narcotics    |
| 3   | Non-Psychiatric Inpatient Care                  | Inpatient ward for patients without mental disorders (General) |

Source: PJKN RS Marzoeqi mahdi, 2025

### **Medical Supporting Activities**

The medical support services provided at the PKJN of Marzoeqi Mahdi Hospital include:

- Psychosocial Rehabilitation
- Medical Rehabilitation
- Community Mental Health
- Nutrition Services
- Pharmacy
- Radiology
- Clinical Pathology Laboratory

### **Non-Medical Supporting Activities**

The non-medical support services provided at the PKJN of Marzoeqi Mahdi Hospital include

- Preparation of the Deceased (Mortuary)
- Laundry and CSSD Facilities
- Environmental Health and Hospital Occupational Safety and Health Facilities
- Medical Records System
- Hospital Management Information System

- f. Hospital Facilities Maintenance Department
- g. Patient Administrative Services

### 3.1.4 Hospital Bed Capacity

The current number of beds at Dr. H. Marzoeki Mahdi Hospital in Bogor is 590, with detailed information as follows.

**Table 3.4. Capacity of Dr. H. Marzoeki Mahdi Hospital Based on the Number of Beds**

| Type of Services                | Classes      | Number of Bed  |
|---------------------------------|--------------|----------------|
| A. Psychiatrist                 | VIP          | 13 bed         |
|                                 | Class I      | 29 beds        |
|                                 | Class II     | 42 bed         |
|                                 | Class III    | 275 bed        |
|                                 | PHCU         | 49 bed         |
|                                 | Isolation    | 4 bed          |
|                                 | Co-morbidity | 16 bed         |
| B. NAPZA                        | Class III    | 60 bed         |
| C. Non-Psychiatric<br>(General) | Class VIP    | 2 bed          |
|                                 | Class I      | 16 bed         |
|                                 | Class II     | 19 bed         |
|                                 | Class III    | 49 bed         |
|                                 | ICU          | 4 bed          |
|                                 | Isolation    | 8 bed          |
|                                 | Perina       | 4 bed          |
| <b>Total Number of Beds</b>     |              | <b>590 bed</b> |

Source: PKJN RS Marzoeki Mahdi, 2025

### 3.1.5 Electricity Supply

The primary power source for the PKJN Marzoeki Mahdi Hospital activities is supplied by PLN, with a capacity of 415 KVA for the corridors and 550 KVA for the psychiatric ward. For backup purpose, a 635 KVA generator is available on-site.

### 3.1.6 Clean Water Supply

The primary source of clean water for the PKJN Marzoeki Mahdi Hospital activities is from the municipal water utility (PDAM). For backup supply, groundwater is used, which is treated beforehand by adding chlorine.

The calculation of clean water supply requirement for the Marzoeki Mahdi Hospital PKJN is based on the flow rate recorded by the flowmeter. The hospital's clean water supply system begins with the flow of clean water to the groundwater tank, then to the rooftop tank, and is

distributed to the various rooms by gravity. The following is a breakdown of clean water usage for operational activities at the Marzoeki Mahdi Hospital PKJN:

**Table 3.5. Clean Water Requirements for Operational Activities at Marzoeki Mahdi Hospital**

| Water Requirements                                                                                        | Water Requirements (m <sup>3</sup> /day) |
|-----------------------------------------------------------------------------------------------------------|------------------------------------------|
| Ruang OK, IGD, Kebidanan, Parikesit, Bisma, Perina, ICU, Antasena, Basudewa, Poli Umum, Apotek Farmasi    | (13,35 ~ 13)                             |
| Dewi Amba, Dewi sri, Antareja, Abimanyu, Srikandi, Rama, Arimbi, Utari, Bratasena, PHCU wanita, Saraswati | (36,4 ~ 36)                              |
| Poli Psikiatri, Fisioterapi, Radiologi, Poli Gigi, Farmasi, CSSD, Gudang, Candradimuka                    | (31,45 ~ 31)                             |
| Laundry                                                                                                   | (23,3 ~ 23)                              |
| Sadewa, Antareja, Shinta, Rehab Psikososial, UPIP                                                         | (14,2 ~ 14)                              |
| Laboratory                                                                                                | (6,35 ~ 6)                               |
| Haemodialisa, Ismaya                                                                                      | (8,35 ~ 8)                               |
| Nutrition Facility                                                                                        | (9,7 ~ 10)                               |
| Administration Office                                                                                     | (14,7 ~ 15)                              |
| Student Dormitory                                                                                         | (24,1 ~ 24)                              |
| Others                                                                                                    | (19,7 ~ 20)                              |
| Total                                                                                                     | 200 m <sup>3</sup> /day                  |

Source: PJKN RS Marzoeki mahdi, 2025

### 3.1.7 Solid Waste Management

#### **Non-Hazardous Waste**

Non-hazardous waste generated by the Marzoeki Mahdi PKJN Hospital are categorized as household-like waste. The current household-like waste management practices implemented by the PKJN at Marzoeki Mahdi Hospital include:

- a. Providing separate domestic waste bins (organic and non-organic).

- b. Separating domestic temporary collection points (TPS) from hazardous waste (B3) temporary collection points.
- c. Separating waste at the source, which is then transported to the hospital's temporary collection points (TPS) daily with the assistance of domestic waste collection staff. The hospital's TPS uses a Transfer Depot system, consisting of a shelter with a container on top; an Arm Roll Truck regularly collects waste from the PKJN Marzoeqi Mahdi Hospital TPS.
- d. Regularly controlling vectors and pests in the vicinity of the temporary collection points.
- e. Collaborating with the Bogor City Environmental Agency regarding routine waste collection.
- f. Conducting independent management through the following methods:
  - Implementing composting of organic waste to produce fertilizer used in Green Open Spaces, with the waste generated amounting to approximately 0.5 m<sup>3</sup> to 1 m<sup>3</sup>.
  - Separating recyclable waste that has economic value.

### **Hazardous Waste**

The hazardous waste generated by the operational activities of the PKJN Marzoeqi Mahdi Hospital consists of medical waste and non-medical hazardous waste. The hazardous waste generated includes the following:

- a. Medical waste with infectious characteristics (A337-1)
- b. Expired pharmaceutical waste (A337-2)
- c. Expired hazardous chemical substances (A337-2)
- d. Laboratory equipment contaminated with hazardous substances (A337-4)
- e. Hazardous waste from unspecified sources, including:
  - Used hazardous substance packaging
  - Used fluorescent lamps
  - Used batteries
  - Rags contaminated with hazardous materials
  - and B3-contaminated waste with code A108d

**Table 3.6. Hazardous Waste According to Waste Sources**

| <b>Source</b>                | <b>Sharp Objects Waste</b>                    | <b>Infectious and Pathological Waste</b>                                                   | <b>Chemical and Pharmacy Waste</b>                                                               |
|------------------------------|-----------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Treatment room and emergency | Damaged hypodermic needles, intravenous sets, | Sanitary pads, bandages, gauze, and cotton swabs contaminated with blood or bodily fluids; | Blood pressure monitors, spilled medication, medication packaging/bottles, leftover disinfectant |

| Source                                                  | Sharp Objects Waste                                           | Infectious and Pathological Waste                                                                                                                                                                                            | Chemical and Pharmacy Waste                                                                                                                  |
|---------------------------------------------------------|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
|                                                         | catheters, vials, and ampoules                                | gloves and masks contaminated with blood or bodily fluids; and IV bags.                                                                                                                                                      |                                                                                                                                              |
| Operation room                                          | Needles, IV sets, catheters, scalpels, knives, and saws       | Blood and other bodily fluids, suction tubes, gowns, gloves, masks, gauze, and other waste contaminated with blood and bodily fluids, tissues, organs, fetuses, body parts, and IV bags.                                     | Disinfectant residues, medicine packaging/bottles, anesthetic gas waste                                                                      |
| Laboratory                                              | Syringes, broken glass, petri dishes, slides, broken pipettes | Blood and body fluids, bacteriological cultures and specimens, tissues, animal carcasses, infected swabs, and tubes and containers contaminated with blood and body fluids (e.g., sputum containers, urine/feces containers) | Reagents, fixatives, formalin, xylene, toluene, methanol, methylene chloride, and other solvents; broken laboratory thermometers             |
| Pharmacy /<br>Aphotecary                                | -                                                             | -                                                                                                                                                                                                                            | Expired medications, spilled medications, boxes, plastic or glass medication bottles, plastic packaging, leftover medications                |
| Radiology installation                                  | -                                                             | -                                                                                                                                                                                                                            | Silver, acetic acid, film cartridges, film, gloves, paper, plastic                                                                           |
| Housekeeping                                            | Glass shards                                                  | -                                                                                                                                                                                                                            | Disinfectants, cleaners, pesticides                                                                                                          |
| Facilities and infrastructures maintenance installation | Fluorescent lights, broken batteries, car battery.            | -                                                                                                                                                                                                                            | Cleaning solutions, oils, lubricants, thinners, used batteries, used car batteries, used filters, used light bulbs                           |
| Kitchen                                                 | -                                                             | Masks and gloves                                                                                                                                                                                                             | Containers/bottles of dishwashing detergent and leftover dishwashing detergent, containers/bottles of disinfectant and leftover disinfectant |

| Source                 | Sharp Objects Waste                   | Infectious and Pathological Waste                                                  | Chemical and Pharmacy Waste                                                                  |
|------------------------|---------------------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Laundry                | -                                     | Plastic bags, used linens                                                          | Detergent containers and detergent residue, disinfectant containers and disinfectant residue |
| Doctor's office        | Damaged syringes, vials, and ampoules | Cotton, gauze bandages, gloves, and masks contaminated with blood or bodily fluids | Broken thermometers and blood pressure monitors, expired medications, leftover disinfectant  |
| Dental and oral clinic | Damaged syringes, vials, and ampoules | Cotton, gauze bandages, gloves, and masks contaminated with blood or bodily fluids | Leftover disinfectant.                                                                       |

Source: PKJN RS Marzoeqi mahdi, 2025

Handling of medical and non-medical solid waste generated by the PKJN Marzoeqi Mahdi Hospital activities *consists* of several stages, which will be described as the following:

a. Containment Stage

This involves the separation of medical and non-medical solid waste. Medical solid waste, such as sharps and infectious waste, is collected in yellow plastic bins, while non-medical solid waste, such as dry and wet solid waste, is collected in black plastic bins. The two types of waste bins are placed separately and distributed across various locations to minimize the risk of cross-contamination.

b. Collection Stages

This involves the transportation of solid waste from its source to a temporary storage facility. Medical solid waste is transported using open-bed motor vehicles designated specifically for medical waste, as well as special yellow hazardous waste containers marked with the "Infectious Waste" symbol. Meanwhile, non-medical solid waste is transported using open three-wheeled motorcycles designated for non-medical waste, which are kept separate from medical waste transport vehicles to prevent cross-contamination.

c. Hazardous Waste Storage facility (TPS LB3)

The collected waste is then disposed of at a Hazardous Waste Storage facility (TPS LB3) according to its type. Non-medical waste is stored at the domestic waste TPS, while medical waste is stored at the Hazardous Waste (B3) TPS. Medical waste will be transported and managed by a third party holding an official permit from the Ministry of Environment and Forestry (KLHK) of the Republic of Indonesia, while non-medical waste

will be transported by sanitation officers from the Bogor City Department of Environment (DLH) for subsequent disposal at the Galuga Final Processing Site (TPA). The storage capacity of the hazardous waste collection point at Dr. H. Marzoeqi Mahdi Mental Hospital in Bogor is 153,125 m<sup>2</sup>. The B3 waste storage facility is located at coordinates 6°34'5.39" S 106°47'8.36" E and is equipped in accordance with the technical specifications for B3 waste storage outlined in Appendix IV, No. 492 of 2024.

All hazardous waste generated has been processed through a partnership with a third party, PT Prasada Pamunah Limbah Industri (PPLI). This partnership covers the transportation and processing of hazardous waste. The waste processed includes infectious waste, sharps, and wastewater treatment plant sludge. Transportation takes place six times a week.

### **3.1.8 Radiation Exposure Safety Measures from Hospital Activities**

Potential radiation exposure from hospital operation activity at RSMM comes from diagnostic radiology procedures (X-ray machine), which produces ionizing, high-energy electromagnetic radiation (X-radiation).

Radiation risks within the facility affect different groups depending on their proximity to the radiation source:

- Radiation Workers (Radiographers and Interventional Doctors): Face the highest potential for cumulative occupational exposure, primarily from scattered radiation bounced off patients during diagnostic procedures.
- Non-Radiology Hospital Staff: Nurses, ward attendants, or clinical personnel assisting during bedside mobile X-ray procedures face potential scatter exposure if unshielded.
- Patients: Exposed to direct primary beam radiation during exams; they require optimized dosing to ensure diagnostic benefit outweighs radiation risk.
- Companions and the General Public: Visitors, patient companions, or individuals in adjacent hallways face potential exposure if structural room shielding (lead-lined walls and doors) is inadequate or if safety protocols are breached.

The management of radiation exposure safety from medical activities is governed by Government of Indonesia Regulation No. 45 of 2023 on Ionizing Radiation Safety and the Security of Radioactive Materials, as well as its technical implementing regulations, such as Ministry of Health Regulation No. 2 Year 2023 on Implementation of Regulation on Environmental Health and Bapeten Regulation No. 4 of 2020 on Radiation Safety in the Use of X-Ray Equipment in Diagnostic and Interventional Radiology. Under these regulations, hospitals operating X-ray equipment are required to implement a comprehensive risk

mitigation framework comprising four core pillars: **Management Requirements, Radiation Protection Requirements, Technical Requirements, and Safety Verification.**

- **Management & Organizational Controls:** Hospitals must designate clear responsibility by appointing certified Radiation Protection Officers (Petugas Proteksi Radiasi / PPR) and qualified personnel (including Radiographers and Medical Physicists). Management must maintain a safety culture, ensure mandatory health surveillance for staff, provide continuous safety education/training, and maintain comprehensive exposure and equipment logs.
- **Radiation Protection Principles & Exposure Monitoring:** Operations must adhere strictly to the core protection principles of Justification (ensuring medical benefit outweighs exposure risk), Dose Limitation (enforcing occupational dose constraints), and Optimization. Measures include designating Controlled and Supervised Areas, implementing real-time workplace radiation monitoring, enforcing individual dosimeter tracking (such as TLDs), and providing special exposure considerations for pregnant workers. Regarding
- **Technical Requirements & Safety Verification:** Facilities must meet strict engineering controls, including validated diagnostic room shielding (e.g., lead-lined walls and doors) and equipment safety features. Regular safety verifications are mandated through routine workplace exposure measurements, potential exposure evaluations, and mandatory Quality Control (QC) performance testing (Uji Kesesuaian) to ensure X-ray equipment remains fully calibrated and safe.

In order to comply with the standards mentioned above, RSMM has conducted relevant actions to ensure safety against radiation exposure from medical activity, such as:

1. Designating 2 (two) Radiation Protection Officers (Petugas Proteksi Radiasi/PPR) and one Medical Physicist with adequate training and certification to ensure medical activity involving radiation exposure is operated following standards.
2. Adding protective layer for building where X-ray diagnostic activities are conducted.
3. Using radiation surveymeter to detect change in radiation dose in the room.

In addition, to comply with the above standards effectively, RSMM has established relevant Standard Operating Procedures (SOPs) related to radiation exposure safety management, including:

1. SOP No. OT.02.02/XXV.1/8760/2022 regarding Use of Personal Protective Equipment (PPE) for Radiology Patients, regulates the use of PPE with lead (Pb) materials to protect against radiation exposure for patients and attendants;

2. SOP No. OT.02.02/XXV.1/8761/2022 regarding Use of Screens for Mobile X-Ray Machine, regulates the installation of protective screening with lead (Pb) layering to protect patients and radiology technician against unintended X-Ray exposure; and
3. SOP No. OT.02.02/XXV.1/8759/2022 regarding Use of Thermo Luminescence Dosimeter (TLD) to detect the radiation dose received by radiology technician.

These SOPs are designed to protect both patients and hospital workers from radiation exposure, ensuring that operational doses remain below regulatory dose limits.

### 3.1.9 Wastewater Management

Wastewater management at the PJKN Marzoeki Mahdi Hospital is carried out through a single Wastewater Treatment Plant (WWTP) equipped with a Sequencing Batch Reactor (SBR) system with a capacity of 200 m<sup>3</sup> per day.

The wastewater entering the WWTP comes from domestic waste generated by the operation activity of the hospital, including:

- Healthcare Services,
- Outpatient clinic,
- Surgical services,
- Emergency care,
- Laboratory testing,
- Pharmacy services,
- Maternity services,
- Laundry,
- Nutrition services,
- Mortuary services,
- Education and training (diklat),
- and other operational activities.

Wastewater from the kitchen activity and laundry is first treated in pre-treatment facility to remove grease and foam. Wastewater then enters the SBR system which operates through five stages in each treatment cycle, namely:

#### 1. Fill (wastewater charge)

The filling stage is the stage/process during which wastewater is pumped from the buffer tank into the SBR tank for further treatment. The tank level is not always constant but varies depending on the volume of wastewater being treated. The filling stage takes 30 minutes.

#### 2. React (aeration or biological reactions)

Wastewater in the SBR is first mixed to become homogenous, During this stage, the wastewater is treated biologically through anaerobic processes. The Mixing Stage takes 45 minutes.

Next is the aeration stage, which is the process of supplying oxygen using a blower to activate aerobic microorganisms in the wastewater. Oxygen, which is essential for this biological treatment, is supplied during the aerobic stage. The aeration stage lasts for 60 minutes.

3. Settle (deposition or sedimentation/classification)

The Sedimentation Stage is the stage during which activated sludge settles. After the aeration period, the activated sludge settles for the required duration. The duration of this stage depends on the thickening and settling characteristics of the activated sludge. However, generally, this stage takes 60 minutes.

4. Decant/Draw (discharge of treated water)

The decanting stage involves the removal of treated wastewater. The treated wastewater is removed from the SBR tank using a decanting system. During the decanting stage, the water level drops to a predetermined minimum level. This stage takes 40 minutes.

5. Idle (interval time before the next cycle)

The idle stage is the stage of waiting before the next cycle can begin. Idle stage lasts for 5 minutes.

Wastewater effluent quality is tested once a month by accredited laboratory. Meanwhile, the wet sludge resulting from the treatment process is stored in a sludge pit or drying bed for the drying process. Once sufficiently dry, the sludge is transported by a third party licensed by the Indonesian Ministry of Environment and Forestry (KLHK) that holds a sludge management permit. The wastewater resulting from the filtration of the sludge is then returned to the wastewater treatment plant (IPAL) system to be reprocessed through a suction process using pumps.

In addition to ensuring environmental compliance, the operation of hospital supporting facilities, including the wastewater treatment system and associated utility infrastructure, will be undertaken in accordance with RSMM's operational procedures that promote safe, accessible, and inclusive healthcare services. The hospital will periodically review relevant operational Standard Operating Procedures (SOPs) and facility management practices to ensure that they remain consistent with applicable Indonesian regulations, national healthcare standards, and the principles of the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD). Particular attention will be given to ensuring that hospital operations, emergency procedures, communication systems, and patient movement arrangements are accessible and responsive to the needs of persons with physical, sensory, intellectual, and

psychosocial disabilities, including patients with mental health conditions. These reviews will also ensure that operational procedures continue to support safe access to healthcare services for vulnerable patients while maintaining patient dignity, non-discrimination, and continuity of care throughout routine operation and emergency situations.

### **3.1.10 Green Open Space (RTH)**

The Marzoeqi Mahdi Hospital Construction Project (PKJN) features green open spaces covering an area of 240,717 m<sup>2</sup>. The presence of green open spaces free from building structures will improve the hospital's microclimate. Hospitals that adhere to eco-friendly standards are generally equipped with healing gardens (HEALING GARDEN HOSPITAL), designed to create a healing environment where patients, staff, and visitors can relieve stress and connect with nature; The hospital features green spaces on the roof (roof garden), and the hospital garden is planted with local or regionally native plants that require minimal water and do not necessitate maintenance with pesticides.

Efforts undertaken by the PKJN at Marzoeqi Mahdi Hospital to maintain the hospital's green open spaces include:

1. Maintenance activities such as cleaning, watering, fertilizing, pest and disease control, pruning, and weed removal.
2. Cleaning of garden areas, parking lots, and fountains. For parking lots and other paved areas, greening is carried out through potting.
3. The types of plants found in green open spaces include ornamental plants and shade trees.

### **3.1.11 Parking Activities**

The parking area is a crucial facility for ensuring the smooth flow of traffic for visitors (patients' families) and hospital staff. To prevent traffic congestion and gridlock when vehicles enter and exit the hospital grounds, the hospital has provided a gate that is set back (approximately 10 meters) from the main road. Additionally, vehicle license plates are recorded for security purposes. The parking facility has a capacity of approximately 150 two-wheeled vehicles, while the parking area for four-wheeled vehicles can accommodate approximately 100 vehicles. The Marzoeqi Mahdi Hospital PKJN has one entrance and one exit facing Jl. dr. Sumeru, which is the main road leading to the hospital.

### **3.1.12 Fire Prevention**

Fire prevention and control efforts at the PKJN Marzoeqi Mahdi Hospital are carried out by establishing a control task force whose personnel have received fire safety training from the Bogor City Fire Department, and by providing active and passive fire protection measures

such as 6 fire hydrants, smoke detectors, heat detectors, fire alarms, evacuation routes, assembly points, and 136 fire extinguishers distributed throughout the facility.

### 3.1.13 Run-off Water Management

Runoff from within the PKJN Marzoeqi Mahdi Hospital complex consists of wastewater and rainwater that flows into the micro-drainage system (tertiary channels) connected to the macro/municipal drainage system on the east side. The macro/city drainage system, or secondary channel, is located on the west side or along Sumeru Road, with a width ( $\ell$ ) of 50 cm and a depth (H) of 50 cm, and flows eastward and northward to follow the terrain. Meanwhile, the micro-drainage system that collects treated wastewater (outlet) is connected to the macro/municipal drainage system located east of the Dr. H. Marzoeqi Mahdi Hospital in Bogor, with a width ( $\ell$ ) of 30 cm and a depth (H) of 50 cm, and then flows northward, adapting to the terrain.

Based on Ministry of Environment Regulation No. 12 of 2009 on Rainwater Utilization, to reduce water pooling and maintain the quality and quantity of groundwater, infiltration wells and retention ponds must be constructed. The specifications for infiltration wells must take into account the project site area; for every 50 m<sup>2</sup>, an infiltration well with a volume of 1 m<sup>3</sup> must be constructed. These infiltration wells collect rainwater as part of groundwater conservation efforts. In addition to infiltration wells, another measure that can be implemented is the construction of retention ponds, which serve the same function but can hold a larger volume of rainwater. The following table shows the locations of the infiltration wells:

According to the survey results, the stormwater drainage system on Dr. Sumeru Street (east) is covered by concrete, making it difficult to clearly assess its condition. In response, the PKJN at Marzoeqi Mahdi Hospital has constructed 15 infiltration wells, each with a capacity of 1.18 m<sup>3</sup>.

### 3.1.14 Disease Vector Management

Pest control at the Marzoeqi Mahdi Hospital Construction Site is carried out by a third party, PT Solusi Pest Control, throughout the entire site. The site is divided into work zones based on the specific tasks being performed and tailored to the nature of each job. Pest control methods include both chemical and non-chemical/mechanical approaches.

#### 1) Workspace

Pest control is carried out throughout the entire PKJN Marzoeqi Mahdi Hospital area, with work areas divided into indoor and outdoor sections. This division of work areas is intended to align with the pest control methods employed.

#### 2) Disease Vector Management

Vector control has also been implemented by PKJN Marzoeki Mahdi Hospital, covering the following work areas: Indoor areas (lobby, emergency department, patient care rooms, meeting rooms, nutrition unit, ICU, pharmacy, restrooms) and outdoor areas (waste disposal site, parking lot, courtyard, inner garden, security post).

The vector control work is carried out through the following mechanisms:

1. Vector and pest control at the hospital is conducted by a third party, PT Solusi Pest Control, in collaboration with the hospital.
2. The types of pests and vectors covered by the control activities include mosquitoes, flies, rats, termites, ants, dogs, cats, and other pests.
3. Control activities are conducted daily through monitoring and treatment in the PKJN rooms of Marzoeki Mahdi Hospital.
4. If treatment using chemical agents is required, it must be carried out with the approval of the head of the department.
5. Every treatment activity using chemical agents must be accompanied by clear signage indicating that the room is currently undergoing treatment with chemical agents.
6. All monitoring and treatment activities conducted by the third-party contractor, PT Solusi Pest Control, must be supervised by the hospital's sanitation officer.
7. Monitoring and treatment activities must be reported monthly.

### **3.2 Description of Marzoeki Mahdi Hospital Development Project**

The development plan for Marzoeki Mahdi Hospital is a strategic step in supporting the transformation of the national health system, as mandated by Regulation of the Minister of Health of the Republic of Indonesia No. 12 of 2025 concerning the Ministry of Health's Strategic Plan for 2025–2029. The development of this hospital aims to improve access to and the quality of referral health services while strengthening RSMM's capacity as a platform for the continuous education of medical specialists.

The development strategy is implemented through the construction and arrangement of infrastructure in accordance with educational hospital standards, the provision of modern facilities, infrastructure, and medical equipment, as well as the strengthening of the integration of service, education, and research functions. These efforts are also directed at increasing student capacity, improving the quality of clinical education platforms, and ensuring equitable access to referral services across regions. The scope of activities includes building construction plans, plans for the procurement of medical equipment to optimize service facilities, strengthening education and research facilities, enhancing human resources (HR) through competency development via both formal and non-formal education, and strengthening a digital-based health information management system.

### 3.2.1 Project Setting and Layout

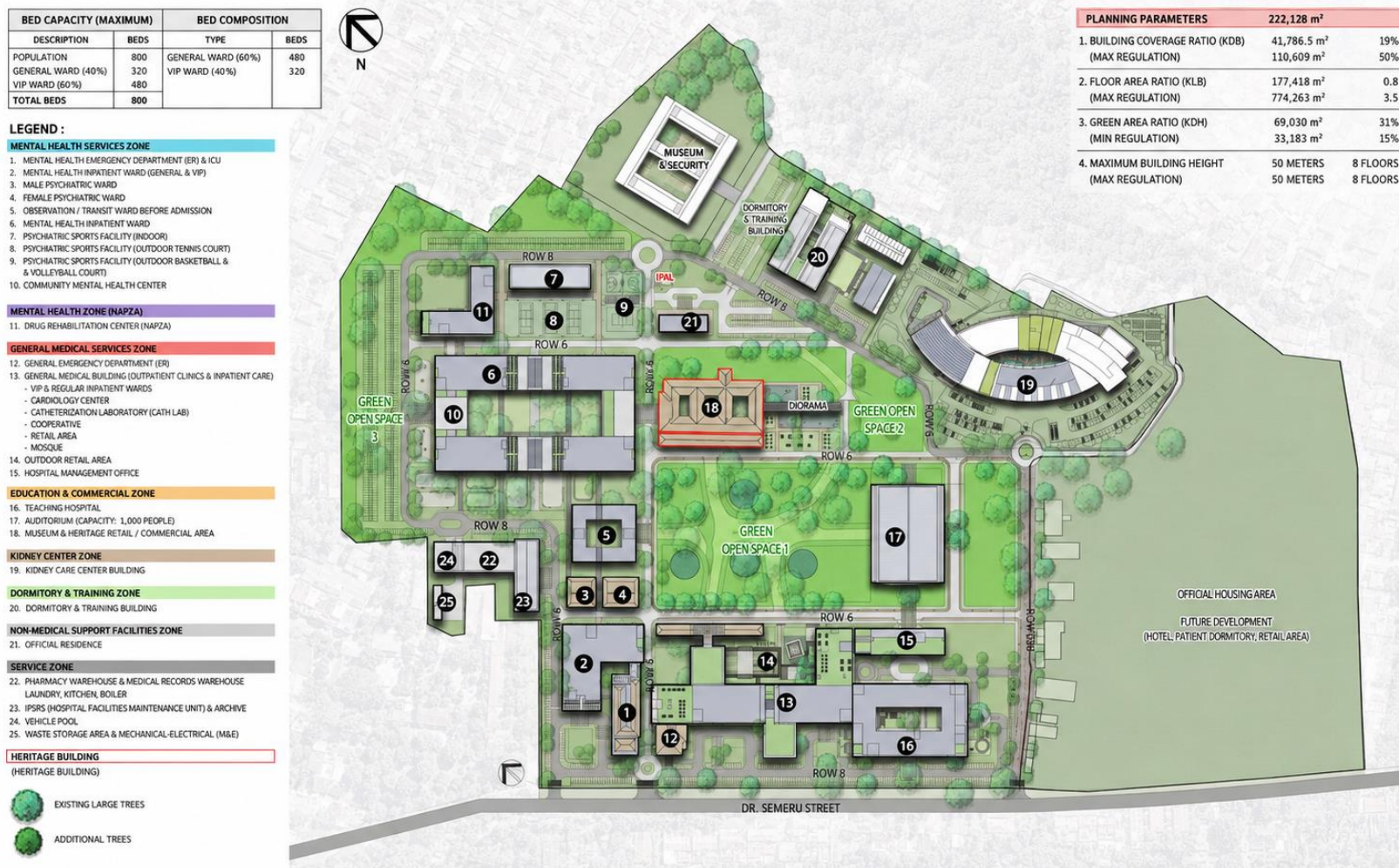
The project will be carried out on the existing grounds of Dr. H. Marzoeqi Mahdi Hospital in Bogor, located at Jl. Dr. Semeru No. 114, Menteng Village, West Bogor Subdistrict, Bogor City, West Java Province. The boundaries of the project site are as follows:

|       |                                                     |
|-------|-----------------------------------------------------|
| North | : Residential Area                                  |
| West  | : Bogor City Regional Hospital and Residential Area |
| South | : Jalan Dr. Semeru                                  |
| East  | : Employee Housing and Residential Area             |

The site layout for the proposed development project is shown in the following figure.

## ESIA-ESMP

## Development of Dr. H. Marzoeqi Mahdi Psychiatric Hospital



MARZOEKI MAHDI HOSPITAL  
**DEVELOPMENT MASTERPLAN**  
 BOGOR

DEVELOPMENT  
**MASTERPLAN**

Figure 3.2. Marzoeqi Mahdi Hospital Development Masterplan Layout

### 3.2.2 Project Component

The development of the Marzoeqi Mahdi Hospital entails a comprehensive modernization overhaul and layouting of the healthcare complex. Component of the development of Marzoeqi Mahdi Hospital consisted of 1) Infrastructure (Civil Works) Development, 2) Medical and Non-medical Equipment Procurement, 3) Human Capital Assessment, and 4) Project Management. The entirety of project components is financed through the AIIB TRUST Project, except for demolition of existing buildings. Detailed information of project components is explained below.

#### 1. Infrastructure (Civil Works)

In order to develop the Marzoeqi Mahdi Hospital into a standardized hospital in Asia/Asia-Pacific, infrastructure readiness is one of the most important readiness criteria. Nowadays, the main issue faced by RSMM regarding infrastructure readiness is the condition of its service buildings, most of which are decades old and do not yet meet modern hospital standards. Facilities such as isolation rooms, laboratories, radiology units, operating rooms, and ICUs remain limited, making it impossible to fully support comprehensive tertiary referral services. Additionally, the zoning arrangement between psychiatric and non-psychiatric services is not yet optimal, which has the potential to cause discomfort for patients and medical staff.

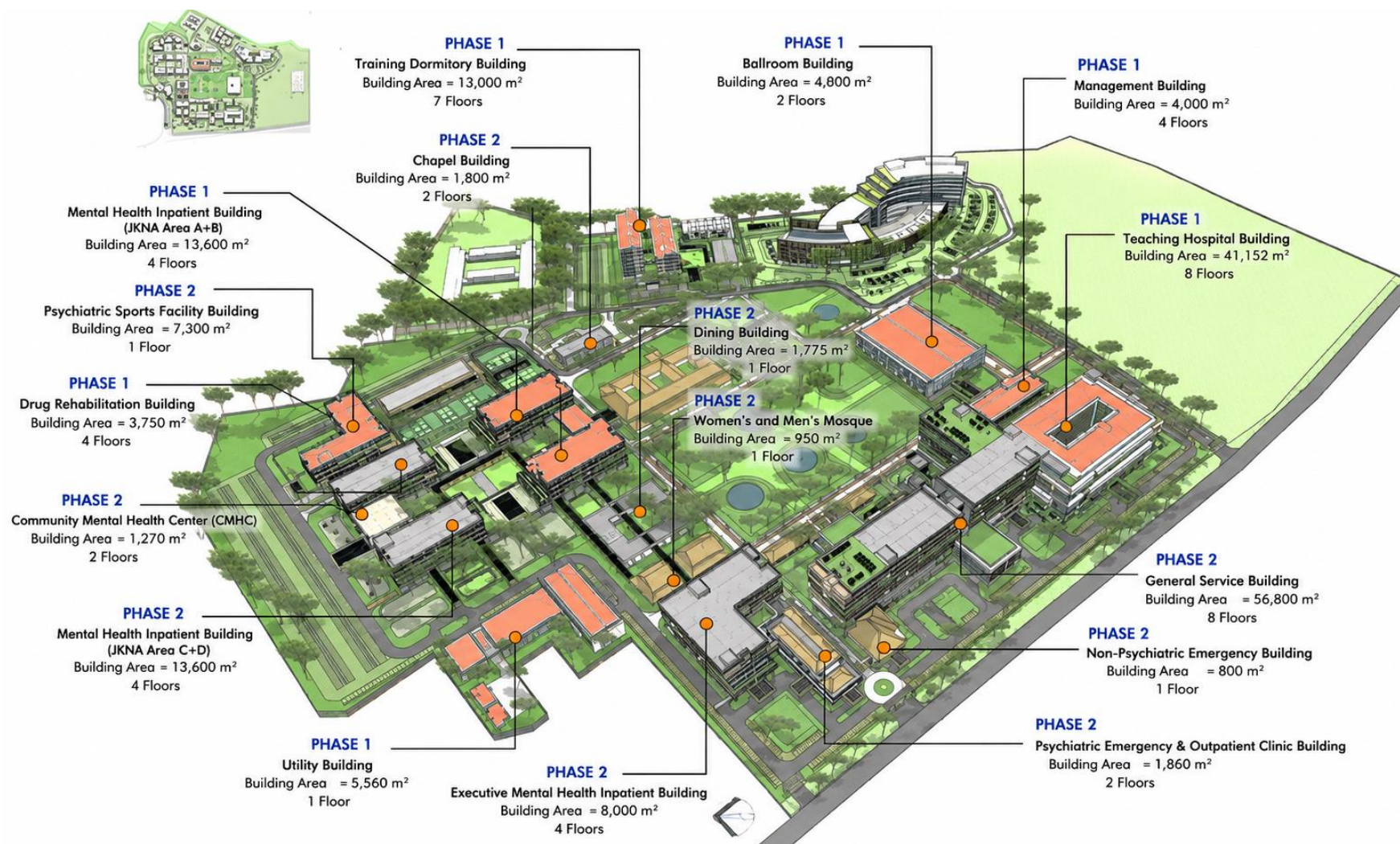
Therefore, the construction of a new building and the modernization of facilities are urgent priorities so that RSMM can provide health care services that meet international standards, while also supporting its educational and research functions and ensuring professional hospital management.

The development activities of the Marzoeqi Mahdi Hospital will include the construction and layouting of hospital complex. The development plan also includes the demolition of existing infrastructure, which may have surpassed its functional age and may pose risks of safety for the patients and hospital staffs.

The hospital infrastructure construction plan is strategically divided into two phases (Phase 1 and Phase 2) to ensure the hospital remains operational throughout construction. The development of new hospital infrastructures will be a part of AIIB-financed activity. However, the existing facilities (which will be demolished and/or relocated to provide the land for the new buildings) are categorized as “associated facilities”, and are not financed under the AIIB support. The infrastructure to be constructed in each phase are as follows:

##### a. Phase I Development:

- Teaching Hospital Building
  - RSMM Management Office
  - Ballroom/Auditorium
  - Dormitory & Training Center
  - JKN Psychiatri Inpatient Building
  - NAPZA Building (Narcotics, Psychotropics, and Addictive Substances Center)
  - Waste Management & Utility (MEP) Building
- b. Phase II Development:
- General Services Building (Outpatient clinics, VIP & Regular inpatient wards, MCU facilities, Radiology, Laboratory, etc.)
  - General Emergency Department (ER)
  - Psychiatric Emergency Department & Psychiatric MCU
  - Psychiatric Inpatient & Outpatient Building (VIP)
  - UPIP (Psychiatric Intensive Care Unit/PICU) Male & Female
  - Quiet Rooms/Transit (pre-inpatient admission)
  - Sports Psychiatry Building
  - PKJN Building (National Center for Community Mental Health)
  - Funeral House



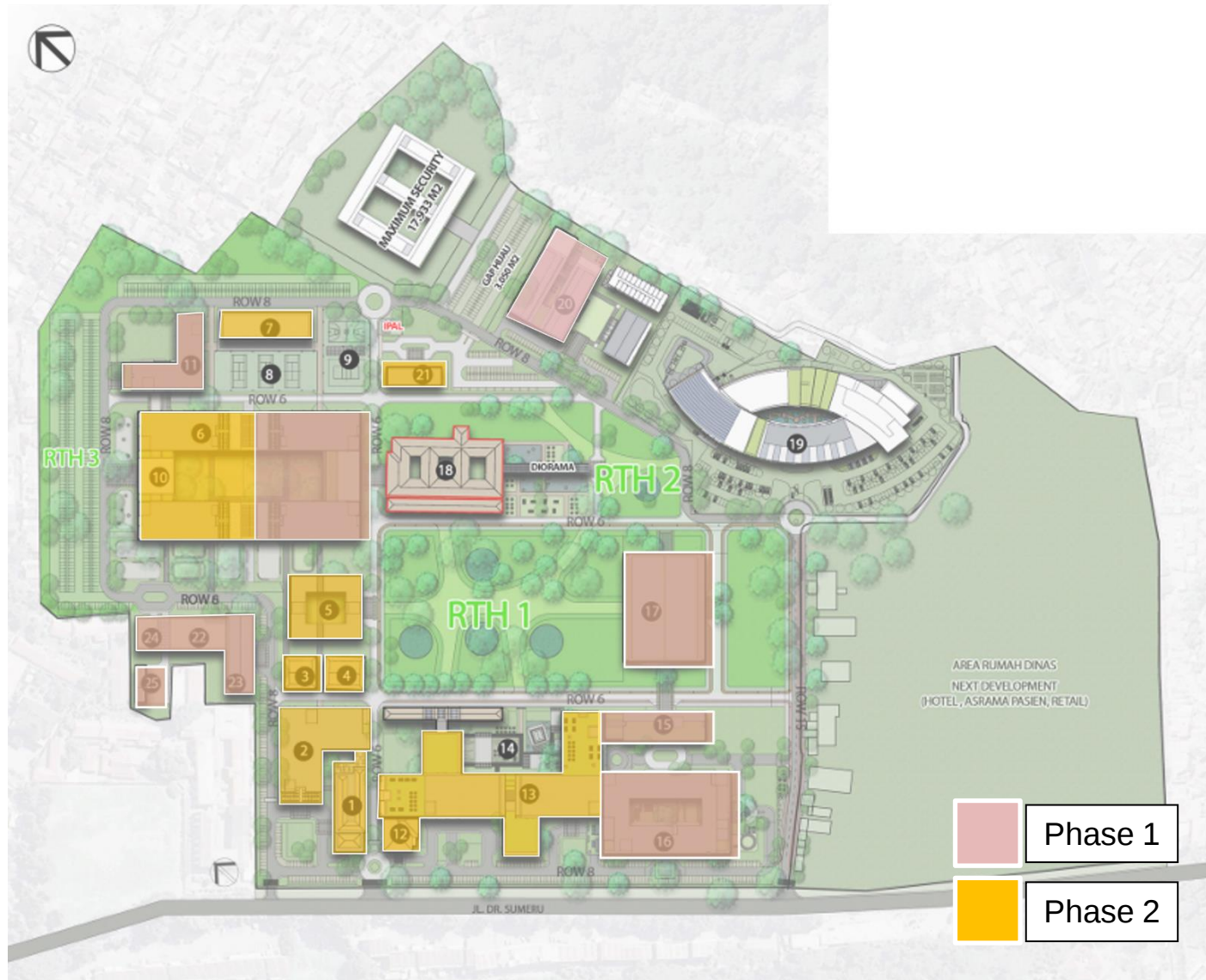


Figure 3.3. Hospital Development Phase Masterplan Layout

## 2. Medical and Non-Medical Equipment Procurement

The project includes the procurement of specialized medical and non-medical equipment for the new facilities to ensure full operational readiness. From an Environmental and Social perspective, the provision of these equipment packages shall be assessed based on their lifecycle impact, energy efficiency, and waste management requirements:

### a. Medical equipment and support systems.

Medical equipment will comprise a range of diagnostic, therapeutic, and life-support systems required to deliver advanced and specialized healthcare services within the new facilities. This includes equipment to support emergency care, intensive care, diagnostic imaging, and other clinical services.

### b. Non-medical equipment.

Non-medical equipment will include IT systems for a smart hospital, hospital interior, and furniture, as well as supporting systems necessary for daily hospital operations and patient comfort within the new buildings.

The provision of these equipment packages is intended to complement the newly developed infrastructure and to ensure that all facilities are fully equipped and operational upon completion. Furthermore, the availability of modern and comprehensive equipment within these new buildings is expected to enhance the hospital's capacity to attract, retain, and optimize the performance of specialist doctors, thereby strengthening the delivery of specialized medical services.

## 3. Human Capital Investment

The development of Marzoeqi Mahdi Hospital is not merely a physical infrastructure expansion, but a transformation into a national center of excellence for mental health. The establishment of a Teaching Hospital and Research Hub (including PKJN and NAPZA centers) is strategically designed to generate long-term positive social impacts through human capital investment, encompassing:

- Workforce capacity building
- Teaching hospital integration
- A national research hub for mental health
- Knowledge transfer and community literacy

## 4. Project Management

The project includes a dedicated component for overall management, implementation, and supervision to ensure effective delivery and compliance with AIIB's Environmental and Social Framework (ESF). This component covers:

- Detailed Engineering Design and Cost Estimate (DEDC): to finalize technical designs, ensuring they incorporate "Green Hospital" principles, energy efficiency, and universal access (disability-friendly) as required by E&S standards.
- Construction Management Consultant (CMC): to oversee quality control and ensure the contractor's compliance with the Environmental and Social Management Plan (ESMP) and Occupational Health and Safety (OHS) protocols during construction.
- Equipment Consultant (EQC): To support the planning and procurement of medical and non-medical equipment.

### 3.2.3 Demolition of Existing Hospital Building

The development of Dr. H. Marzoeqi Mahdi Hospital is situated on the existing hospital ground. The development will require the demolition of the existing infrastructures and buildings. Demolition of existing hospital infrastructures excludes the Inpatient Building for substance abuse (Rama Building), Patient Registration & Dental Clinic, and Medical Checkup and Radiology Building (Candradimuka Building). Details on infrastructures planned for demolition and it's planned development are described under the table below.

**Table 3.7. Existing Building, Demolition/Renovation Plan, and Planned Development Building**

| No. | Existing Building                                       | Action<br>(Demolished/<br>Renovated) | Development Building                                                                                             | Notes                              |
|-----|---------------------------------------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------|------------------------------------|
| 1.  | Integrated Clinic ( <i>Poli Terpadu</i> )               | Demolished                           | Inpatient & Psychiatric Clinic (VIP)                                                                             |                                    |
|     | General Inpatient Building "Srikandi"                   | Demolished                           |                                                                                                                  |                                    |
|     | Central Sterile Services Department (CSSD)              | Demolished                           |                                                                                                                  |                                    |
|     | Laboratory                                              | Demolished                           |                                                                                                                  |                                    |
| 2.  | Medical Checkup VIP + Radiology "Candradimuka" Building | Renovated                            | Psychiatric ER & Psychiatric Medical Checkup                                                                     | Suspected Cultural Heritage (ODCB) |
| 3.  | Dental Clinic/ Pharmacy                                 | Renovated                            | General ER                                                                                                       | Suspected Cultural Heritage (ODCB) |
| 4.  | Mosque 2                                                | Demolished                           | Outdoor Retail                                                                                                   |                                    |
| 5.  | General Clinic/MCU/EEG                                  | Demolished                           | General Services Building (Clinic, Inpatient VIP & Regular); MCU; Radiology; Laboratory; Canteen, Retail, Mosque |                                    |
|     | Sleep Study                                             | Demolished                           |                                                                                                                  |                                    |
|     | General Specialist Clinic                               | Demolished                           |                                                                                                                  |                                    |
|     | Operating Room                                          | Demolished                           |                                                                                                                  |                                    |
|     | Hemodialysis                                            | Demolished                           |                                                                                                                  |                                    |

| No. | Existing Building                              | Action<br>(Demolished/<br>Renovated) | Development Building                                                         | Notes                              |
|-----|------------------------------------------------|--------------------------------------|------------------------------------------------------------------------------|------------------------------------|
|     | Patient Administration                         | Demolished                           |                                                                              |                                    |
|     | Nurse Station                                  | Demolished                           |                                                                              |                                    |
|     | ICU                                            | Demolished                           |                                                                              |                                    |
|     | Parikesit                                      | Demolished                           |                                                                              |                                    |
|     | VK/Perina                                      | Demolished                           |                                                                              |                                    |
|     | Medical Checkup                                | Demolished                           |                                                                              |                                    |
| 6.  | "Ismaya" Building                              | Demolished                           | Teaching Hospital                                                            |                                    |
| 7.  | Abandoned Official Residence                   | Demolished                           | Green Open Space (RTH)                                                       |                                    |
|     | Mosque 1                                       | Demolished                           |                                                                              |                                    |
|     | General Inpatient Building "Basudewa"          | Demolished                           |                                                                              |                                    |
| 8.  | General Inpatient Building "Gayatri"           | Demolished                           | RSMM Management Office                                                       |                                    |
|     | General Inpatient Building "Antasena"          | Demolished                           |                                                                              |                                    |
|     | General Inpatient Building "Bisma"             | Demolished                           |                                                                              |                                    |
| 9.  | General Inpatient Building "Sadewa"            | Demolished                           | Auditorium/ Ballroom                                                         |                                    |
|     | General Inpatient Building "Shintya"           | Demolished                           |                                                                              |                                    |
|     | General Inpatient Building "Yudistira"         | Demolished                           |                                                                              |                                    |
|     | Co-ed Dormitory                                | Demolished                           |                                                                              |                                    |
|     | Rehabilitation Building                        | Demolished                           |                                                                              |                                    |
|     | Social Rehabilitation Building                 | Demolished                           |                                                                              |                                    |
| 10. | Psychiatric Intensive Care Unit (UIP)          | Demolished                           | Green Open Space (RTH)                                                       |                                    |
|     | Administration Building (KPPA)                 | Demolished                           |                                                                              |                                    |
| 11. | Inpatient Psychiatric Building "Jatayu"        | Demolished                           | Museum & Retail; Commercial Area                                             |                                    |
|     | Inpatient Psychiatric Building "Rama"          | Renovated                            |                                                                              | Suspected Cultural Heritage (ODCB) |
|     | KPRS/Kesmawa                                   | Demolished                           |                                                                              |                                    |
| 12. | "Murai" Room                                   | Demolished                           | Funeral Room                                                                 |                                    |
| 13. | Environmental Health (Kesling)                 | Renovated                            | Waste Water Processing Unit (IPAL)                                           |                                    |
| 14. | Morgue                                         | Demolished                           | Sport Psychiatric (Outdoor Tennis Court)                                     |                                    |
| 15. | Hospital Facilities and Infrastructure (IPSRS) | Demolished                           | <ul style="list-style-type: none"> <li>Sport Psychiatric (Indoor)</li> </ul> |                                    |

| No. | Existing Building                           | Action<br>(Demolished/<br>Renovated) | Development Building                                                                                                                           | Notes        |
|-----|---------------------------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
|     | Inpatient Psychiatric Building "Drupadi"    | Demolished                           | <ul style="list-style-type: none"> <li>Sport Psychiatric (Outdoor Basketball and Volleyball Court)</li> <li>Substance Abuse (NAPZA)</li> </ul> |              |
|     | Inpatient Psychiatric Building "Arimbi"     | Demolished                           |                                                                                                                                                |              |
|     | Inpatient Psychiatric Building "Utari"      | Demolished                           |                                                                                                                                                |              |
|     | Inpatient Psychiatric Building "Gatot Kaca" | Demolished                           |                                                                                                                                                |              |
| 16. | Inpatient Psychiatric Building "Subadra"    | Demolished                           | Psychiatric Inpatient Building (PKJN)                                                                                                          |              |
|     | Inpatient Psychiatric Building "Saraswati"  | Demolished                           |                                                                                                                                                |              |
|     | Inpatient Psychiatric Building "Dewi Amba"  | Demolished                           |                                                                                                                                                |              |
| 17. | Inpatient Psychiatric Building "Bratasena"  | Demolished                           | Community Mental Health (PKJN)                                                                                                                 |              |
| 18. | Inpatient Psychiatric Building "Antareja"   | Demolished                           | Open Space (Parking)                                                                                                                           |              |
| 19. | Inpatient Psychiatric Building "Dewi Amba"  | Demolished                           | Calm Room (Psychiatric Patient Transition Room)                                                                                                |              |
|     | Archive Room                                | Demolished                           |                                                                                                                                                |              |
|     | Canteen                                     | Demolished                           |                                                                                                                                                |              |
| 20. | Meeting Building (Ex Kresna)                | Demolished                           | Female Psychiatric Intensive Care Unit (UPIP)                                                                                                  |              |
| 21. | Warehouse & Pharmacy                        | Demolished                           | Male Psychiatric Intensive Care Unit (UPIP)                                                                                                    |              |
| 22. | Boiler Room                                 | Demolished                           | Hospital Facilities and Infrastructure (IPSRs) & Archive                                                                                       |              |
|     | Nutrition                                   | Demolished                           |                                                                                                                                                |              |
| 23. | Laundry                                     | Demolished                           | Warehouse, Pharmacy, Laundry, Nutrition, Boiler                                                                                                |              |
|     | Vehicle Pool                                | Demolished                           |                                                                                                                                                |              |
| 24. | Inpatient Psychiatric Building "Abimanyu"   | Demolished                           | Vehicle Pool                                                                                                                                   |              |
| 25. | Inpatient Building pemping                  | Demolished                           | Utility Building                                                                                                                               |              |
| 26. |                                             |                                      | Dormitory & Training Building                                                                                                                  | New Building |

Source: Dr. H. Marzoeki Mahdi Hospital Masterplan, 2026



**Figure 3.4. Overlay of Existing Hospital infrastructures and Building with Development Plan of Dr. H. Marzoeqi Mahdi Hospital**

### 3.2.4 Relocation of Existing Hospital Services Due to Development Project Activities

During the hospital expansion construction, hospital services will be maintained to ensure medical treatment in Marzoeqi Mahdi continues. However, hospital services will be temporarily relocated to other buildings. Hospital service relocation is divided into two phases (Phase 1 and Phase 2) following the construction phases.

Hospital services relocation place will follow the Indonesia's Standard Inpatient Class/ *Kelas Rawat Inap Standar* (KRIS) to ensure patient comfort and care quality remains uncompromised during the transition. There are 12 (twelve) criteria according to KRIS which will need to be fulfilled for choosing relocation place, namely:

1. Building components such as floors, walls, ceilings, doors, and windows are not highly porous, so they do not easily accumulate dust and microorganisms;
2. Ventilation with an air exchange rate of at least 6 times per hour;
3. Lighting in accordance with standards, namely 250 lux for examinations/procedures and 50 lux for rest periods;
4. Each bed is equipped with two unbranched electrical outlets and a nurse call button connected to the nurses' station;
5. A nightstand or small cabinet is available at each bed;
6. The room temperature is maintained within the range of 20–26°C;
7. Patient rooms are separated by gender, age (children or adults), and infectious versus non-infectious diseases;
8. A maximum of four beds per room with a minimum distance of 1.5 meters between the edges of the beds;
9. Curtains or partitions between beds made of material that is easy to clean and does not absorb water; curtains may be fixed or suspended from the ceiling; the distance between the curtains and the floor is between 25 and 35 cm;
10. A bathroom is available inside the patient room with a door that opens outward and can be opened from both sides, and is ventilated;
11. The bathroom meets accessibility standards; the bathroom door is wheelchair-accessible; it is equipped with handrails, has a non-slip floor, and does not allow water to pool; and
12. Each bed has an oxygen outlet complete with a flowmeter at the bedhead.

The KRIS standards serve as minimum requirements that sufficiently aligned with international guidelines and GIIP, such as WHO Decontamination and Waste Management in Healthcare Facilities, CDC Core Infection Prevention and Control Practices for Healthcare Delivery Settings.

Hospital services relocation plan and the temporary relocation place is described below.

**Table 3.8. Hospital Services Relocation Plan during Phase 1 Construction**

| No. | Planned Development                          | Existing Services                                      | Relocation                                           |
|-----|----------------------------------------------|--------------------------------------------------------|------------------------------------------------------|
| 1.  | Teaching Hospital                            | “Aruna” Polyclinic                                     | Ex. Komdik Building                                  |
| 2.  |                                              | “Ismaya” Integrated Geriatric Building                 | Specialist Polyclinic Building 1 <sup>st</sup> floor |
| 3.  | Management Building                          | Intensive Care Unit (ICU)                              | Hemodialysis Building                                |
| 4.  |                                              | “Antasena” Inpatient Room                              | “Basudewa” Inpatient Room                            |
| 5.  |                                              | “Bisma” Non-Psychiatric Inpatient Room                 | “Basudewa” Inpatient Room                            |
| 6.  | Auditorium                                   | “Shinta” Teenager Psychiatric Inpatient Room           | “Antareja” Inpatient Room                            |
| 7.  |                                              | “Sadewa” Adult Psychiatric Inpatient Room              | NAPZA Rehabilitation Building 1                      |
| 8.  |                                              | MPP Room                                               | “Kresna” Gallery Building                            |
| 9.  |                                              | “Anggada” Hospice Rehabilitation Room                  | Office Housing                                       |
| 10. | Psychiatric Inpatient Building A and B       | “Subadra” Psychiatric Inpatient Room (non-Operasional) | -                                                    |
| 11. |                                              | “Arimbi” Psychiatric Inpatient Room                    | “Bratasena” Inpatient Room                           |
| 12. |                                              | “Gatot Kaca” Psychiatric Inpatient Room                | “Bratasena” Inpatient Room                           |
| 13. | Utility Room                                 | Laundry Building                                       | Warehouse                                            |
| 14. | Dormitory & Training Building (New Building) | -                                                      | -                                                    |
| 15. | NAPZA Rehabilitatiin Building                | -                                                      | -                                                    |

Source: Marzoeeki Mahdi Hospital, August 2026

#### **Buildings in Table 3.8 (Phase 1 Relocation Plan)**

The following buildings used for temporary relocation during Phase I were constructed in **1882**:

- **Srikandi Building:** (Listed as *Poli Psikiatri Terpadu S.D MPKP Srikandi*) built in 1882.
- **Integrated Psychiatric Building:** (Refers to *Poli Psikiatri Terpadu*) built in 1882.
- **Candradimuka Building:** (Also spelled *Candrarimuka* in the table) built in 1882.
- **Kresna Building:** (Listed as *Gedung Galeri Kresna*) built in 1882.
- **Administration (KPPA) Building:** Built in 1882 (with updates in 2004).

- **Subadra Building:** Built in 1882.
- **SIRS Building:** (Listed as *Candradimuka S.D SIRS*) built in 1882.
- **Dewi Amba Building:** Built in 1882.
- **Pemping Room:** Built in 1882.
- **Pharmacy Building:** (Likely refers to *Ex. Gudang Obat*) built in 1882.
- **Nursing Area:** (Relocation for Echo Room; listed as *Bidang Keperawatan*) built in **1881**.

#### Buildings in Table 3.9 (Phase 2 Relocation Plan)

The following buildings used for temporary relocation during Phase II were constructed in **1882**:

- **Kresna Building:** Built in 1882.
- **Yudistira Building:** Built in 1882.
- **Sinta Building:** (Listed as *Wisma Shinta*) built in 1882.
- **Sadewa Building:** Built in 1882.

**On Cultural Heritage:** Several of these structures, specifically **Gedung Rama**, **Gedung Candradimuka**, and the **Patient Administration & Dental Building**, are officially recognized as **Potential Cultural Heritage Objects (ODCB)** due to their colonial-era architectural significance. Under the current project design, these identified heritage buildings are proposed to be **retained** and protected during construction.

**Table 3.9. Hospital Services Relocation Plan during Phase 2 Construction**

| No. | Planned Development                                              | Existing Services                     | Relocation                             |
|-----|------------------------------------------------------------------|---------------------------------------|----------------------------------------|
| 1.  | General Service Building                                         | Non-Psychiatric Specialist Polyclinic | Teaching Hospital                      |
| 2.  | Psychiatric ER & Psychiatric Clinic                              | Assessment Center                     | Teaching Hospital                      |
| 3.  |                                                                  | Radiodiagnostic                       | Teaching Hospital                      |
| 4.  |                                                                  | SIRS                                  | Management Building                    |
| 5.  |                                                                  | Physiotherapy                         | Teaching Hospital                      |
| 6.  |                                                                  | Laboratory                            | Teaching Hospital                      |
| 7.  | Executive Psychiatric Inpatient Building                         | “Srikandi” Room                       | Psychiatric Inpatient Room A           |
| 8.  |                                                                  | Integrated Psychiatric Polyclinic     | Teaching Hospital                      |
| 9.  | Psychiatric Inpatient Building C & D (National Health Insurance) | “Saraswati” Inpatient Room            | Psychiatric Inpatient Building A and B |
| 10. |                                                                  | “Utari” Inpatient Room                | Psychiatric Inpatient Building A and B |
| 11. |                                                                  | “Dewi Amba” Inpatient Room            | Psychiatric Inpatient Building A       |
| 12. |                                                                  | “Dewi Sri” Inpatient Room             | Teaching Hospital                      |

| No. | Planned Development                                                                     | Existing Services                      | Relocation                             |
|-----|-----------------------------------------------------------------------------------------|----------------------------------------|----------------------------------------|
| 13. | <i>Pusat Kesehatan Jiwa Nasional</i> (PKJN)/ National Center for Mental Health Building | “Bratasena” Psychiatric Inpatient Room | Teaching Hospital                      |
| 14. | Sport Psychiatric Building                                                              | “Drupadi” Psychiatric Inpatient Room   | Psychiatric Inpatient Building A and B |
| 15. | Male Psychiatric Intensive Care Unit (PICU/UIP)                                         | “Kresna” Gallery                       | Management Building                    |
| 16. | Female Psychiatric Intensive Care Unit (PICU/UIP)                                       | “Kresna” Gallery                       | Management Building                    |
| 17. |                                                                                         | Pharmacy Warehouse                     | Teaching Hospital                      |
| 18. |                                                                                         | General Warehouse                      | Management Building                    |
| 19. |                                                                                         | Nutrient Installation Building         | Teaching Hospital                      |
| 20. | Psychiatric Transit Building                                                            | Archive Building                       | Teaching Hospital                      |
| 21. |                                                                                         | Commercial Area / Canteen              | Teaching Hospital                      |

Source: Marzoeki Mahdi Hospital, August 2026

### 3.3 Project Implementation Activities

The project phases analyzed in this ESIA are those that have the potential to cause environmental or social impacts and risks. The project implementation phase is divided into two phases based on the master plan: Phase 1 and Phase 2. In general, the project is divided into the following steps:

**Table 3.10. Project Implementation Activities**

| Stages of Activities |                                                 |
|----------------------|-------------------------------------------------|
| Pre-Construction     | Planning and permitting                         |
| Construction         | Construction Labor Recruitment                  |
|                      | Mobilization of Construction Tools and Material |
|                      | Construction and Operation of Base Camp         |
|                      | Relocation of Existing Hospital Services        |
|                      | Demolition of Existing Buildings                |
|                      | Disposal of Demolition Debris                   |
|                      | Land Preparation                                |
|                      | Construction of Main and Supporting Facilities  |
| Operation            | Operational Labor Recruitment                   |
|                      | Hospital Operation and Maintenance              |

### **3.3.1 Pre-Construction**

#### **3.3.1.1 Planning and Permitting**

Planning and permitting activities include preparatory tasks such as drafting design drawings, planning the project implementation team, and so on. In addition, these activities involve obtaining permits related to the construction plan, such as building demolition permits, and coordinating with local governments and relevant agencies.

Potential impacts arise from the planning and permitting activities are changes in public perception and attitudes.

### **3.3.2 Construction**

#### **3.3.2.1 Construction Labor Recruitment**

The development plan for Dr. H. Marzoeqi Mahdi Hospital is expected to require a large workforce. Labor needs are divided into two phases: approximately 500 people for Phase I and approximately 500 people for Phase II, resulting in a total workforce requirement of approximately 1,000 people for two phases of construction. Labor recruitment will be conducted in stages in accordance with the ongoing work phases.

Labor needs are divided into workers with specialized skills and workers without specialized skills. Labor recruitment will prioritize local workers from Menteng Village, West Bogor Subdistrict, Bogor City, specifically for workers without specialized skills.

The anticipated impacts of this project include increased employment opportunities, increased business opportunities, changes in public perception and attitudes, as well as public unrest.

#### **3.3.2.2 Mobilization of Construction Tools and Material**

These activities include the mobilization of vehicles and heavy equipment for construction purposes and the transport of building materials. The procurement of vehicles and heavy equipment is carried out by the general contractor, as is the supply of construction materials.

The mobilization of equipment and materials takes place via Jl. DR. Sumeru. The impacts of these activities include a decline in ambient air quality, increased noise levels, traffic congestion, and public concern.

#### **3.3.2.3 Construction and Operation of Base Camp and Temporary Facilities**

The construction and operation of the base camp and temporary facilities involves a series of activities aimed at providing support facilities for the workforce and project operations. Temporary facilities to be constructed during this stage includes (but not limited to): 1) Site

Office (Direksi Keet), 2) Security Post, 3) Material Warehouse, 4) Basecamp, and 5) Toilet. The temporary facilities serve as a hub for accommodation, coordination, administration, logistics storage, and support for field activities during both the construction and operational phases. The location of the base camp and temporary facilities will be adjusted according to the project's phases. The locations of the base camp and temporary facilities are shown in the following figure.

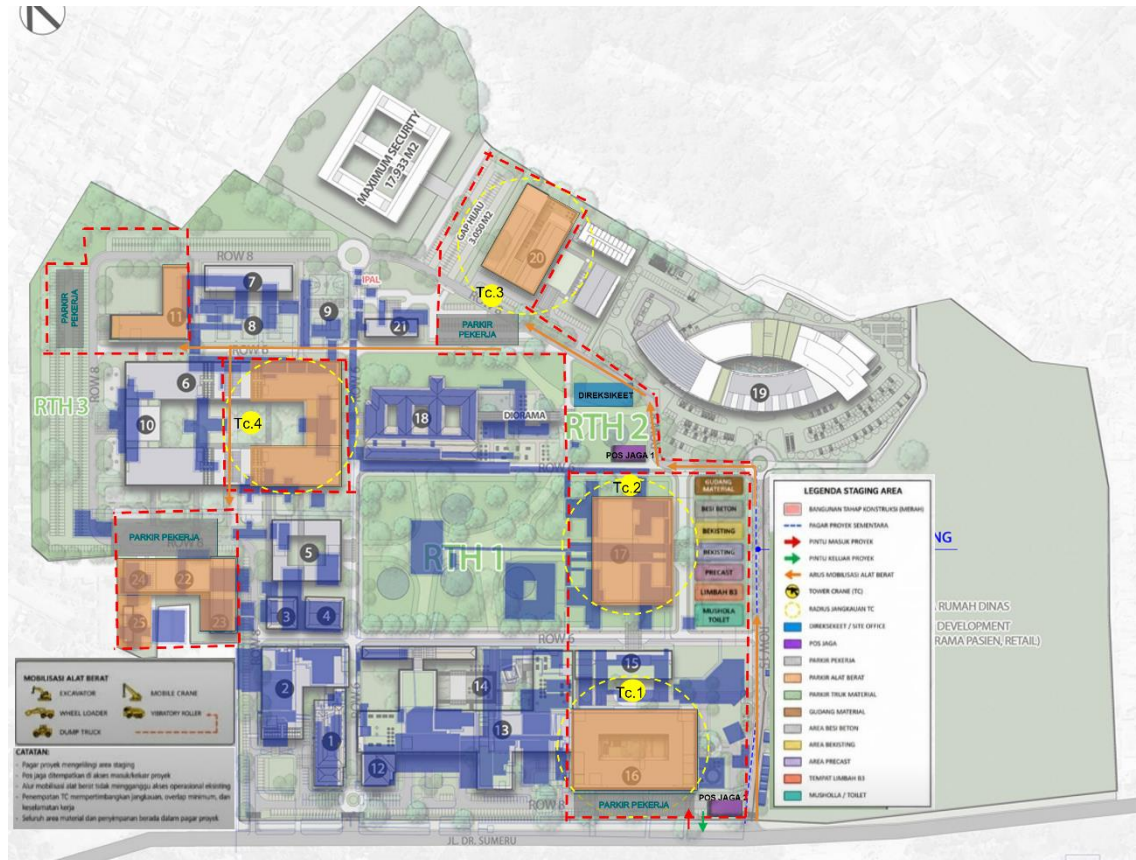


Figure 3.5. Basecamp and Laydown Area During Phase 1 of Project

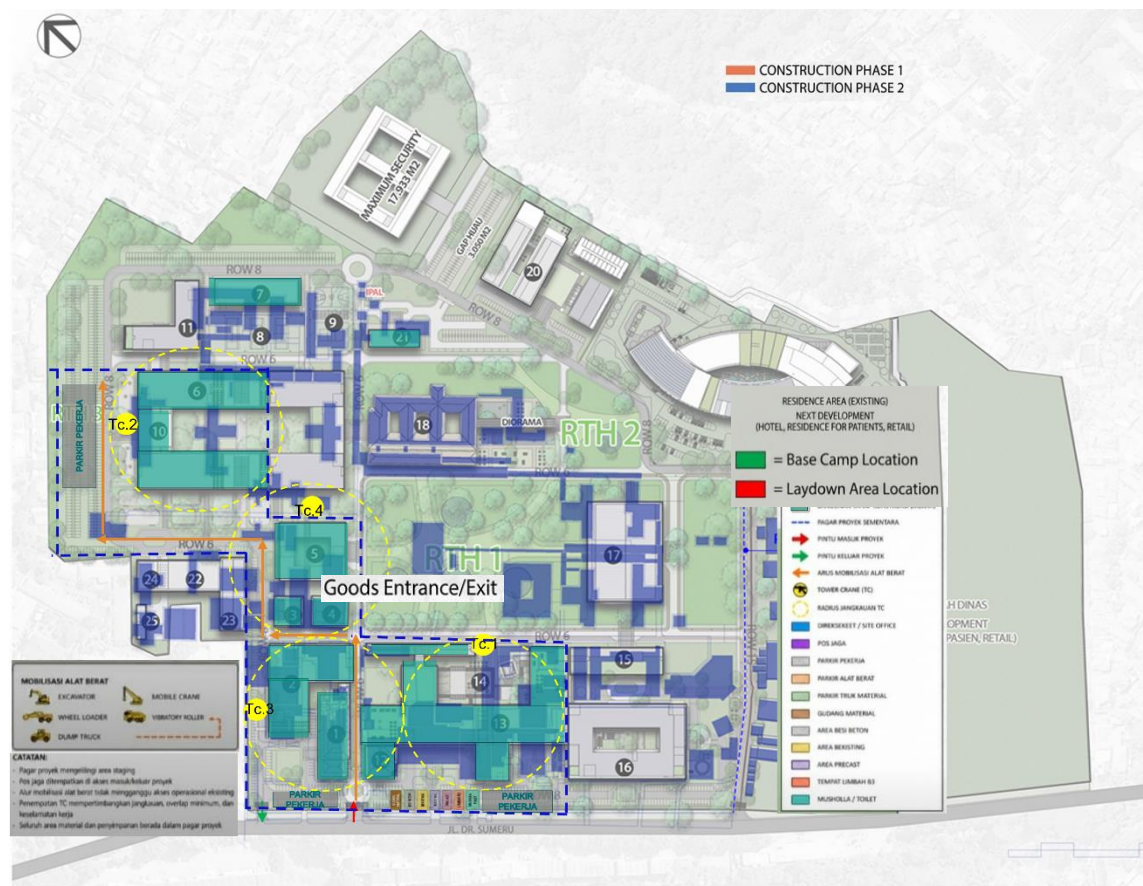


Figure 3.6. Basecamp and Laydown Area During Phase II of Project

### 3.3.2.4 Relocation of Existing Hospital Services

Relocation of existing hospital services is conducted in order to maintain uninterrupted healthcare delivery and ensure operational continuity throughout the construction period. The relocation activity is planned to be conducted two times following project phase (Phase 1 and Phase 2). First phase relocation is planned to be conducted on July 2027, prior to Phase 1 demolition and construction activities. After Phase 1 construction is finished (planned on July 2029), second phase of relocation will begin, estimated on August 2029. Relocation activities consists of medical and supporting tools, patients, and hospital staffs. Hospital services relocation plan and temporary destination building is described in the table below.

Table 3.11. Hospital Services Relocation Plan during Phase 1 Construction

| No. | Planned Development | Existing Services                      | Relocation                                           |
|-----|---------------------|----------------------------------------|------------------------------------------------------|
| 1.  | Teaching Hospital   | “Aruna” Polyclinic                     | Ex. Komdik Building                                  |
| 2.  |                     | “Ismaya” Integrated Geriatric Building | Specialist Polyclinic Building 1 <sup>st</sup> floor |
| 3.  |                     | Intensive Care Unit (ICU)              | Hemodialysis Building                                |

| No. | Planned Development                          | Existing Services                                      | Relocation                      |
|-----|----------------------------------------------|--------------------------------------------------------|---------------------------------|
| 4.  | Management Building                          | “Antasena” Inpatient Room                              | “Basudewa” Inpatient Room       |
| 5.  |                                              | “Bisma” Non-Psychiatric Inpatient Room                 | “Basudewa” Inpatient Room       |
| 6.  | Auditorium                                   | “Shinta” Teenager Psychiatric Inpatient Room           | “Antareja” Inpatient Room       |
| 7.  |                                              | “Sadewa” Adult Psychiatric Inpatient Room              | NAPZA Rehabilitation Building 1 |
| 8.  |                                              | MPP Room                                               | “Kresna” Gallery Building       |
| 9.  |                                              | “Anggada” Hospice Rehabilitation Room                  | Office Housing                  |
| 10. | Psychiatric Inpatient Building A and B       | “Subadra” Psychiatric Inpatient Room (non-Operasional) | -                               |
| 11. |                                              | “Arimbi” Psychiatric Inpatient Room                    | “Bratasena” Inpatient Room      |
| 12. |                                              | “Gatot Kaca” Psychiatric Inpatient Room                | “Bratasena” Inpatient Room      |
| 13. | Utility Room                                 | Laundry Building                                       | Warehouse                       |
| 14. | Dormitory & Training Building (New Building) | -                                                      | -                               |
| 15. | NAPZA Rehabilitatiin Building                | -                                                      | -                               |

Source: Marzoeqi Mahdi Hospital, August 2026

**Table 3.12. Hospital Services Relocation Plan during Phase 2 Construction**

| No. | Planned Development                                              | Existing Services                     | Relocation                             |
|-----|------------------------------------------------------------------|---------------------------------------|----------------------------------------|
| 1.  | General Service Building                                         | Non-Psychiatric Specialist Polyclinic | Teaching Hospital                      |
| 2.  | Psychiatric ER & Psychiatric Clinic                              | Assessment Center                     | Teaching Hospital                      |
| 3.  |                                                                  | Radiodiagnostic                       | Teaching Hospital                      |
| 4.  |                                                                  | SIRS                                  | Management Building                    |
| 5.  |                                                                  | Physiotherapy                         | Teaching Hospital                      |
| 6.  |                                                                  | Laboratory                            | Teaching Hospital                      |
| 7.  | Executive Psychiatric Inpatient Building                         | “Srikandi” Room                       | Psychiatric Inpatient Room A           |
| 8.  |                                                                  | Integrated Psychiatric Polyclinic     | Teaching Hospital                      |
| 9.  | Psychiatric Inpatient Building C & D (National Health Insurance) | “Saraswati” Inpatient Room            | Psychiatric Inpatient Building A and B |

| No. | Planned Development                                                                     | Existing Services                      | Relocation                             |
|-----|-----------------------------------------------------------------------------------------|----------------------------------------|----------------------------------------|
| 10. |                                                                                         | “Utari” Inpatient Room                 | Psychiatric Inpatient Building A and B |
| 11. |                                                                                         | “Dewi Amba” Inpatient Room             | Psychiatric Inpatient Building A       |
| 12. |                                                                                         | “Dewi Sri” Inpatient Room              | Teaching Hospital                      |
| 13. | <i>Pusat Kesehatan Jiwa Nasional (PKJN)/ National Center for Mental Health Building</i> | “Bratasena” Psychiatric Inpatient Room | Teaching Hospital                      |
| 14. | Sport Psychiatric Building                                                              | “Drupadi” Psychiatric Inpatient Room   | Psychiatric Inpatient Building A and B |
| 15. | Male Psychiatric Intensive Care Unit (PICU/UPIP)                                        | “Kresna” Gallery                       | Management Building                    |
| 16. | Female Psychiatric Intensive Care Unit (PICU/UPIP)                                      | “Kresna” Gallery                       | Management Building                    |
| 17. |                                                                                         | Pharmacy Warehouse                     | Teaching Hospital                      |
| 18. |                                                                                         | General Warehouse                      | Management Building                    |
| 19. |                                                                                         | Nutrient Installation Building         | Teaching Hospital                      |
| 20. | Psychiatric Transit Building                                                            | Pharmacy Warehouse                     | Teaching Hospital                      |
| 21. |                                                                                         | Commercial Area / Canteen              | Teaching Hospital                      |

Source: Marzoeki Mahdi Hospital, August 2026

To minimize potential environmental, health, and social impacts during the facility's redevelopment, temporary service relocations will adhere to Good International Industry Practice (GIIP), including World Bank Group EHS Guidelines and International Health Facility Guidelines. The relocation process is structured into phased, systematic stages—spanning pre-relocation risk assessments, space and asset preparation, physical transfer execution, and post-move testing and commissioning.

To safeguard patient health and maintain continuity of care throughout physical movements, the hospital already utilizes established Standard Operating Procedures (SOPs) related to the relocation activities, such as:

- ❖ SOP for Patient Transfer from Psychiatric Intensive Care Unit (UPIP) to Inpatient Ward;
- ❖ SOP for Institutional Recipient Program (IPWL);
- ❖ SOP for Infection Prevention and Control;
- ❖ SOP for Emergency Response;
- ❖ SOP for Hazardous Waste Management;
- ❖ SOP for Medical Equipment Management;

- ❖ SOP for Occupational Health and Safety;
- ❖ SOP for Hospital Operational Management.

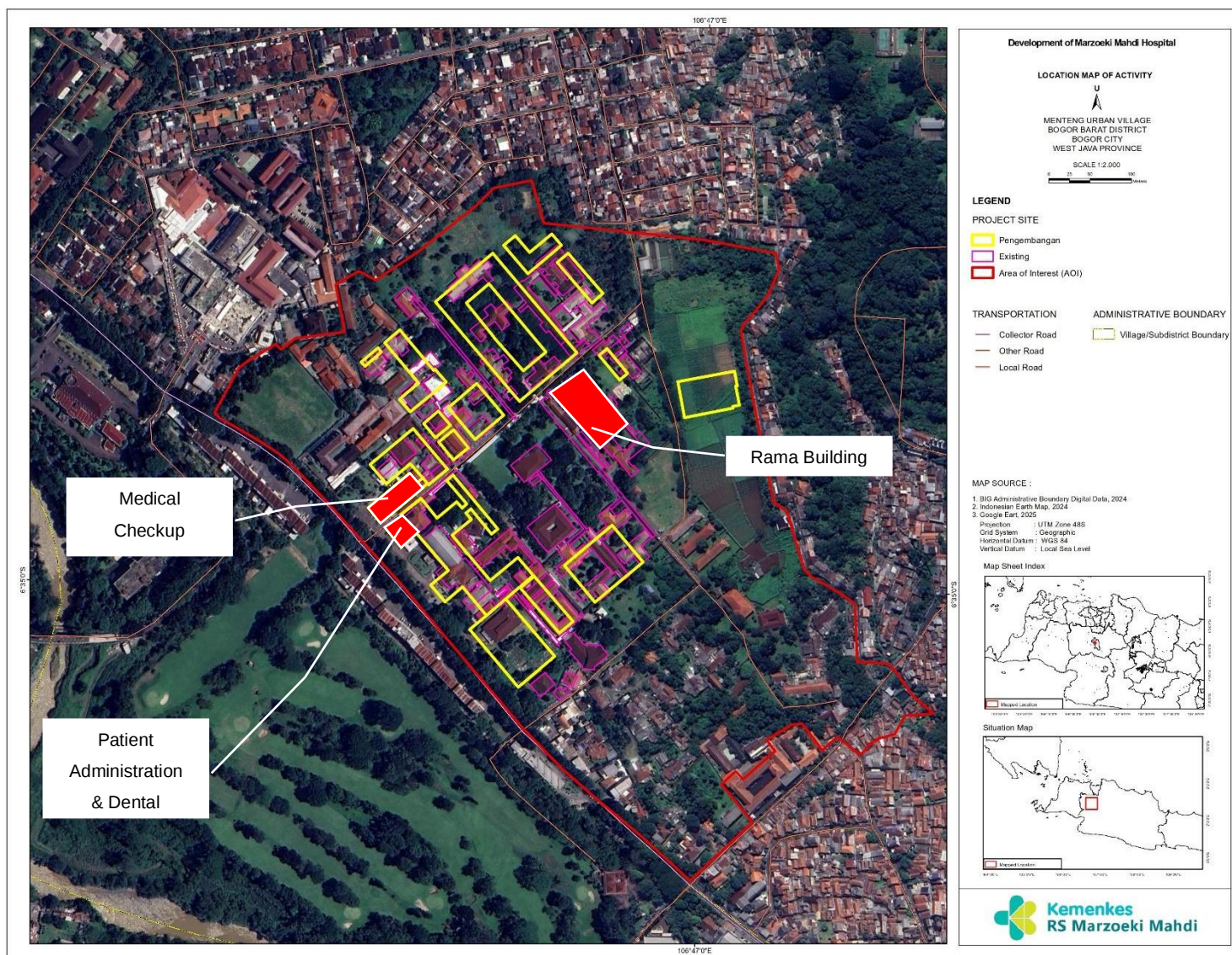
Furthermore, a comprehensive Hospital Relocation and Transition Plan has been prepared and integrated into this ESIA (**Annex F**). This plan serves as an operational guideline, communication protocols, and inter-departmental responsibilities for each relocation phase. Together with existing hospital SOPs, this plan ensures that all relocation activities proceed smoothly, regulatory and safety standards are fully met, and potential disruptions to healthcare delivery and nearby communities are effectively prevented.

### **3.3.2.5 Demolition of Existing Buildings**

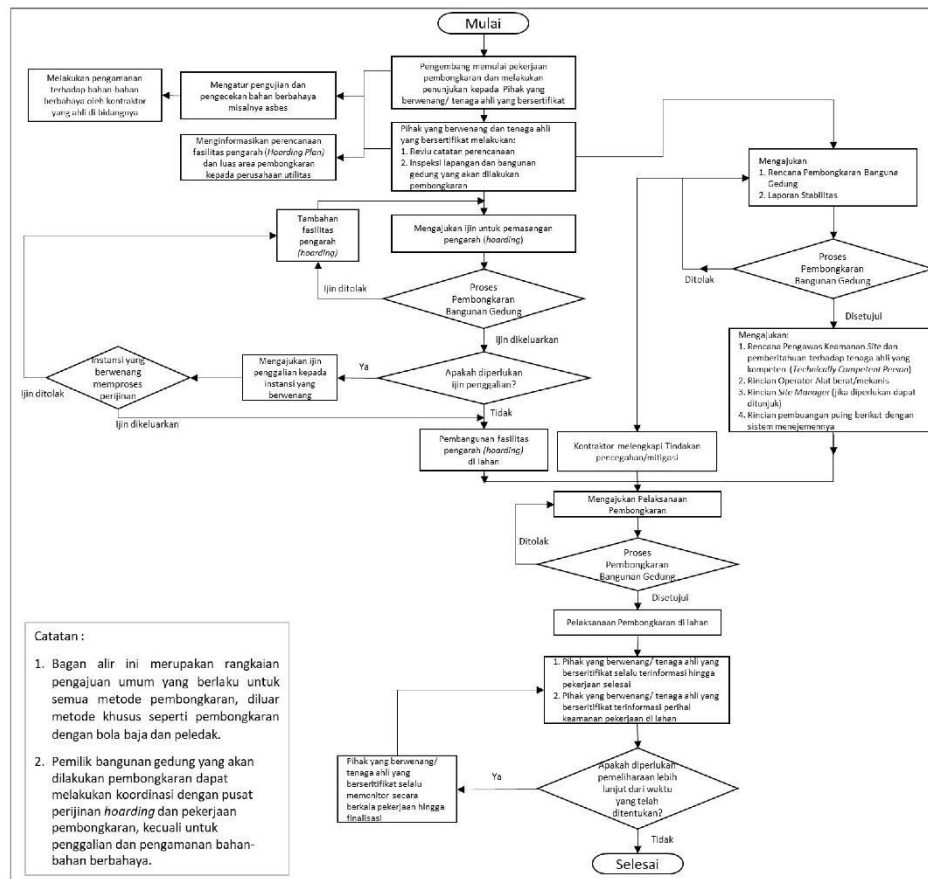
The project site is located within an existing building complex, so the existing buildings must be demolished before construction can begin. The total area of the buildings to be demolished is approximately  $\pm 47,814$  m<sup>2</sup>. The list of buildings will be demolished is mentioned in sub-chapter **3.2.3. Demolition of Existing Hospital Building**. Substance (NAPZA) abuse Inpatient Building (Rama Building), Medical Check-up + Radiology Building (Candradimuka Building), and Dental Clinic/Aphotecary Buildings are exempted from demolition, due to the historical value of the building. However, renovation and moving of building facilities will be still take place without changing the facade.

The Asian Infrastructure Investment Bank (AIIB) does not have a standalone document solely for building demolition. Instead, demolition standards for AIIB-funded projects are governed by its comprehensive Environmental and Social Framework (ESF), requiring projects to adhere to host-country regulations (e.g., Ministry of Public Works and Public Housing Regulation No. 18/2021 in Indonesia) combined with Good International Industry Practice (GIIP).

The following is an overlay map of the location where demolition activities will take place.



**Figure 3.7. Overlay of Existing Facilities with New Facilities to be Constructed (Buildings that Will be Demolished)**



Source: Ministry of General Works and Housing Regulation No. 18 Year 2021 on Standards for Demolition of Buildings

**Figure 3.8. Building Demolition Flowchart**

The demolition of the existing building is divided into several stages, as follows.

- **Preparation Phase**

Before the execution of the demolition activities can be carried out, preparation steps must be conducted to ensure the process can be carried out smoothly. The steps taken for the preparation of building demolition are:

- Preparation of Building Demolition Technical Plan/ Rencana Teknis Pembongkaran Bangunan Gedung

Building Demolition Technical Plan should be prepared prior to demolition activities. The technical plan, in minimum, should encompass the following information:

- Identification of condition of the existing buildings and surrounding environment;
- Demolition method;
- Risks mitigation;
- Drawing of technical demolition plan; and

- Schedule for demolition execution.

- Site Access and Traffic Management

| Task                          | Details                                                                                                                 | Purpose                              |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| Designate entry & exit points | Separate routes for construction vehicles and workers                                                                   | Reduce congestion & improve safety   |
| Temporary access roads        | - Dedicate paths for cranes, dump trucks, excavators                                                                    | Ensure smooth equipment movement     |
| Traffic control measures      | - Speed limit & restricted access signs<br>- Traffic control personel (flagmen)<br>- Barriers separating hospital areas | Maintain pedestrian & vehicle safety |

- Safety Signage Installation and Protective Fencing

| Task               | Details                                                                                       | Purpose                        |
|--------------------|-----------------------------------------------------------------------------------------------|--------------------------------|
| Warning signs      | - "DANGER: DEMOLITION IN PROGRESS"<br>- "AUTHORIZED PERSONEL ONLY"<br>- Emergency exit routes | Prevent unauthorized access    |
| Protective fencing | - Height $\geq 2.5$ meters<br>- Surrounding the entire site                                   | Contain debris & ensure safety |

- Structural Safety and Fire Hazard Assessment

| Task                             | Details                                                             | Purpose                                 |
|----------------------------------|---------------------------------------------------------------------|-----------------------------------------|
| Pre-demolition structural checks | Assess stability & determine safest dismantling method              | Reduce risks of uncontrollable collapse |
| Flammable materials removal      | Ensure no gas cylinders, oxygen tanks, or chemicals remain          | Prevent fire hazards                    |
| Fire safety equipment            | - Install fire extinguishers<br>- Keep a fire watch team on standby | Rapid response in case of fire          |

|                       |                                          |                                           |
|-----------------------|------------------------------------------|-------------------------------------------|
| Utility disconnection | Secure electricity, gas, and water lines | Prevent accidental leaks or electrocution |
|-----------------------|------------------------------------------|-------------------------------------------|

- Worker Safety Equipment (PPE Compliance)

| Equipment            | Purpose                            |
|----------------------|------------------------------------|
| Safety helmet        | Protect against falling debris     |
| Reflector vest       | Ensure visibility around machinery |
| Steel-toed boots     | Prevent foot injuries              |
| Cut-resistant gloves | For handling sharp objects         |
| Respirators/masks    | Protect against dust inhalation    |
| Goggles/face shields | Prevent eye injuries               |
| Earplugs/earmuffs    | Reduce Noise exposure              |

- Installation of Debris Containment Measures

| Measure                | Purpose                                    |
|------------------------|--------------------------------------------|
| Debris chutes          | Transport rubble safely from higher floors |
| Scaffolding & netting  | Contain falling materials                  |
| Water spraying systems | Suppress dust and reduce air pollution     |

- Emergency Response and Evacuation Plan

| Emergency Type               | Response Plan                                         |
|------------------------------|-------------------------------------------------------|
| Structural collapse          | Immediate worker evacuation & medical aid             |
| Fire/hazardous material leak | Fire suppression & emergency response team activation |
| Medical emergency            | On-site first aid & transfer to hospital if needed    |
| Evacuation assembly points   | Marked outside demolition zone                        |

- Identification and Handling of Hazardous Material

Referring to Ministry of Public Works and Housing Regulation No. 18 of 2021 on Building Demolition Standards, Article 11 to 14, project proponent should conduct an assessment of building materials to identify hazardous material in the building. Hazardous material to be identified are:

- a. Asbestos;
- b. Formaldehyde;
- c. Heavy metals such as mercury and lead;
- d. Medical waste;
- e. Fuel
- f. Grease;
- g. Radioactive; and/or
- h. Other materials as referring to regulation on Hazardous Waste.

Specifically for asbestos-containing material (ACM), preliminary identification of ACM at Marzoeqi Mahdi Hospital was conducted through a review of the hospital's inventory document detailing the use of roofing materials at the hospital. Based on the results of primary identification, it was determined that there are asbestos-containing materials in the form of the building roof. The list of buildings containing asbestos roofing and its estimated volume are as follows.

**Table 3.13. List of Building Containing Asbestos Material in Marzoeqi Mahdi Hospital**

| No.             | Building Name               | Building Size (m <sup>2</sup> ) | Roof Material Type  | *Estimation of Asbestos Volume (m <sup>3</sup> ) |
|-----------------|-----------------------------|---------------------------------|---------------------|--------------------------------------------------|
| 1.              | Stoom Boiler                | 98                              | Corrugated Asbestos | 0,49                                             |
| 2.              | EEG                         | 249                             | Corrugated Asbestos | 1,245                                            |
| 3.              | Kantin Koperasi             | 294                             | Corrugated Asbestos | 1,47                                             |
| 4.              | New Psychiatric Clinic Hall | 15                              | Corrugated Asbestos | 0,075                                            |
| 5.              | Subadra – Dewi Amba Hall    | 48                              | Corrugated Asbestos | 0,24                                             |
| 6.              | Hospital Hall               | 1296                            | Corrugated Asbestos | 6,48                                             |
| 7.              | Bangau – Nurse Station Hall | 64                              | Corrugated Asbestos | 0,32                                             |
| 8.              | Bisma – Parikesit Hall      | 69                              | Corrugated Asbestos | 0,345                                            |
| Total Area Size |                             | 2.133,00                        | Total Volume        | 10,67                                            |

Source: Marzoeqi Mahdi Hospital, 2026

\*Volume estimation assuming material thickness is 5 mm

In addition to the ACM in roofing as mentioned in the previous table, a follow-up survey to identify asbestos-containing material should also be conducted to identify ACM in other building components. The survey should be conducted prior to demolition to minimize the risk of unmitigated exposure of asbestos to construction workers and the community.

According to ILO code of practice on asbestos handling (ILO, 1984), asbestos handling for demolition and alteration work should follow these procedures.

1. Handling of asbestos-containing materials should be done by contractors with competency acknowledged by authority in accordance with national practice.
2. Contractors is responsible on identifying asbestos-containing insulation or lagging before demolition commences and to ensure the safe removal and disposal of the material in accordance with the provisions of the national regulations.
3. All sprayed thermal or acoustic insulation, lagging and loose insulation of a fibrous nature should be regarded as containing asbestos until otherwise established.
4. For positive identification the samples taken to identify the possible presence of asbestos should be analysed in a suitably equipped laboratory. The result of such material identification should be reported to the competent authority and, where the material has been identified as containing asbestos, the report should detail the proposed removal programme.
5. The persons or bodies authorised to perform the demolition or alteration work should ensure that the requirements of the competent authority have been fully satisfied before proceeding with demolition or alteration.
6. All workers engaged in the work of demolition or alteration should be informed of any areas where asbestos-containing insulation remains.
7. The authorised persons or bodies should ensure that this material is not accidentally disturbed.
8. All workers engaged in the work of demolition or alteration should be made aware of the health hazards and should be made aware that the work should be performed in accordance with the prescribed safety and health regulations.

In regards of initial ACM presence in the hospital building, and unsurveyed potentially ACM containing building, a more comprehensive guide for ACM risk

management will be prepared in the form of Asbestos Management Plan (AMP), which can be accessed in **ANNEX B – Asbestos Management Plan Framework**.

- Demolition Execution

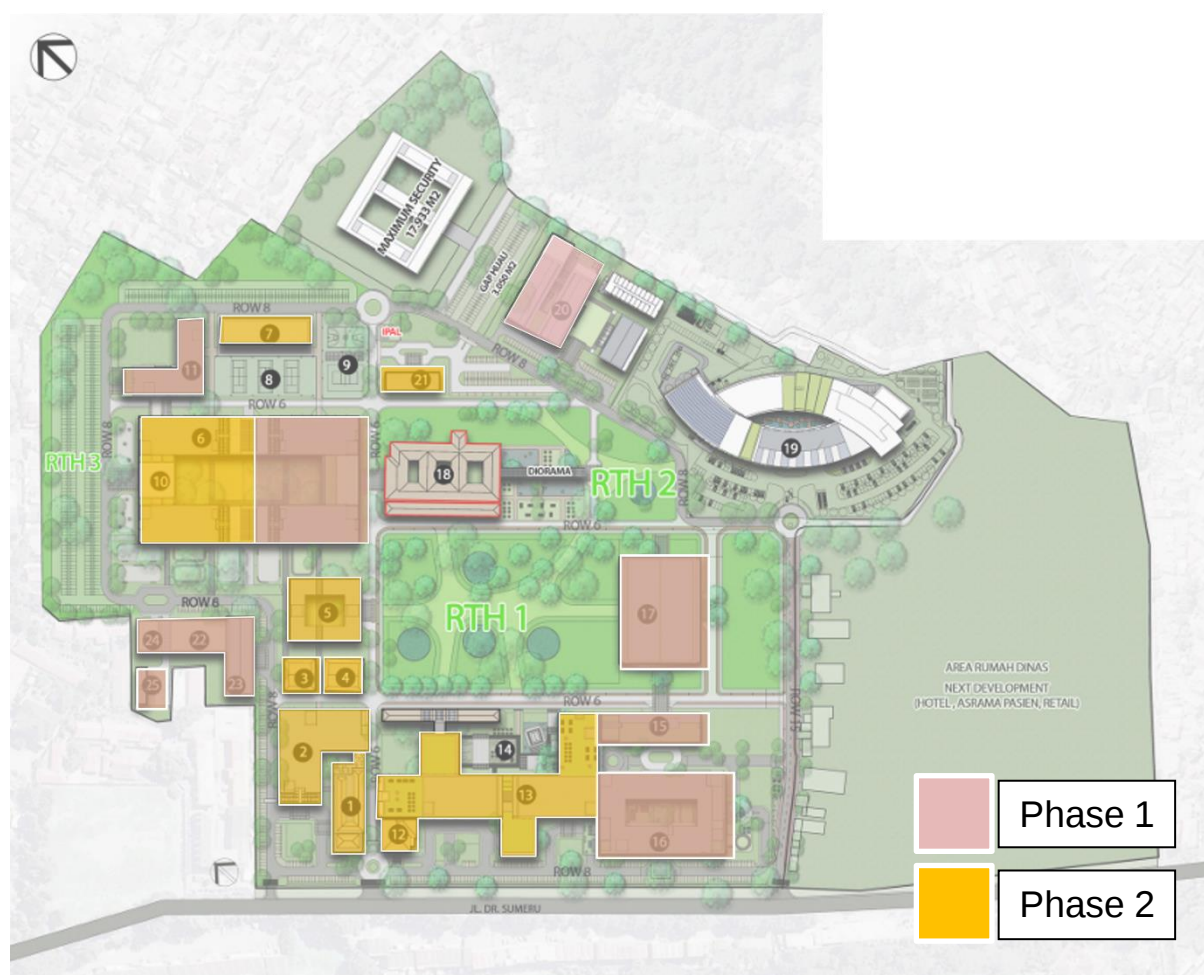
Demolition of existing buildings will be conducted on building with  $\pm 47,814 \text{ m}^2$  of size. The procedure of demolition is explained in the table below.

**Table 3.14. Demolition Process**

| Step                                            | Description                                            | Key Actions                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Step 1: Dismantling of the Upper Floors         | Initial removal of top floor elements and slabs        | <ul style="list-style-type: none"> <li>- Remove non-structural elements (ceiling panels, partitions, lightweight materials)</li> <li>- Cut reinforced concrete slabs into smaller sections using hydraulic saws &amp; jackhammers.</li> <li>- Remove secondary beams first, followed by main structural beams to ensure load transfer stability.</li> <li>- Lower cut beams using a mobile crane to prevent structural impact.</li> </ul> |
| Step 2: Column and Structural Demolition        | Controlled dismantling of vertical structural elements | <ul style="list-style-type: none"> <li>- Remove columns while intact to allow safe reinforcement steel (rebar) extraction.</li> <li>- Use mechanical pullers &amp; oxy-fuel cutting torcher to cut exposed steel reinforcement.</li> <li>- Leave foundation &amp; footing slabs in place temporarily until all upper structures are dismantled.</li> </ul>                                                                                |
| Step 3: Debris Removal and Material Segregation | Systematic handling of demolition waste                | <ul style="list-style-type: none"> <li>- Lower debris through core holes for safe collection &amp; removal.</li> <li>- Separate recyclable materials (steel beams, rebar, aluminum) for reuse/recycling.</li> </ul>                                                                                                                                                                                                                       |

| Step                               | Description                                                    | Key Actions                                                                                                                                                                                                                            |
|------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                    |                                                                | <ul style="list-style-type: none"> <li>- Load non-recyclable debris (concrete rubble, bricks, ceramic tiles) onto dump trucks for disposal.</li> </ul>                                                                                 |
| Step 4: Dust and Pollution Control | Mitigating airborne hazards and ensuring environmental safety. | <ul style="list-style-type: none"> <li>- High-pressure water spraying systems at demolition points to minimize dust.</li> <li>- Install dust nets &amp; temporary enclosures to contain airborne particles within the site.</li> </ul> |

The demolition of the existing building will be carried out in two phases—Phase I and Phase II—in accordance with the hospital's development plan.



**Figure 3.9. Development Phase Plan**

The anticipated impacts of this activity include reduced air quality, increased noise levels, workplace accidents, waste generation, and the generation of hazardous waste.

### **3.3.2.6 Disposal of Demolition Debris**

After structural demolition is completed, the cleanup and site preparation phase begins, focusing on removing all residual materials and preparing the site for new construction. Stages of debris cleanup are:

- Debris Collection and Sorting
- Foundation Removal and Leveling
- Soil and Environmental Restoration
- Project Waste Disposal Operations

A temporary disposal area will be prepared for the temporary storage of disposal material. Currently, the project development is still in masterplan stage, so the indicative disposal area is yet to be determined. However, when choosing disposal area, several criteria must be met, for this project, namely:

- Far from drainage channel, and fitted with retaining structures and silt traps;
- Ease of access for trucks;
- Far from residential area to avoid dust and noise.

Before determining an area as disposal area, the project executing agency/contractor should also coordinate with environmental agency (DLH), so that material disposal is coordinated accordingly.

### **3.3.2.7 Land Preparation**

Land preparation is carried out to prepare the land according to the design elevation and structural requirements. Activities include excavation, filling, soil compaction, slope stabilization, and groundwater management if necessary. Foundation works are then performed using suitable foundation systems such as shallow foundations, piles, or raft foundations depending on soil conditions and structural loads. These works ensure the stability and safety of hospital buildings, which typically require high structural reliability.

The development of Marzoeki Mahdi Hospital will require soil excavation activities for the construction of basement parking facilities located beneath the general service zone and auditorium building. Basement excavation works will be carried out using staged excavation methods to maintain excavation stability and minimize impacts on surrounding structures and hospital operations.

[illegible]

### 3.3.2.8 Construction of Main and Supporting Facilities

a. Phase I Development:

- b. Phase II Development:

- General Services Building (Outpatient clinics, VIP & Regular inpatient wards, MCU facilities, Radiology, Laboratory, etc.)
- General Emergency Department (ER)
- Psychiatric Emergency Department & Psychiatric MCU
- Psychiatric Inpatient & Outpatient Building (VIP)
- UPIP (Psychiatric Intensive Care Unit/PICU) Male & Female
- Quiet Rooms/Transit (pre-inpatient admission)
- Sports Psychiatry Building
- PKJN Building (National Center for Community Mental Health)
- Funeral House

The procedure of construction of hospital and its supporting facilities are described into several steps, as the following:

a. Structural Construction of Main Hospital Buildings

Structural construction activities include erection of reinforced concrete, steel, or composite structural systems comprising columns, beams, slabs, walls, staircases, and roofing systems. Construction is carried out in accordance with hospital design standards, seismic requirements, fire safety regulations, and infection prevention principles.

b. Architectural and Interior Works

Architectural works include wall construction, plastering, flooring, ceilings, roofing finishes, doors, windows, partitions, painting, and façade installation. Interior works are designed to support hygiene, patient comfort, accessibility, and operational efficiency. Specialized materials with antibacterial, fire-resistant, and easy-to-clean properties are commonly used in medical areas such as operating rooms, laboratories, and isolation rooms.

c. Mechanical, Electrical, and Plumbing (MEP) Installation

Hospital construction requires complex MEP systems to support continuous healthcare operations. These installations include:

- Electrical power distribution systems and backup generators;
- Lighting systems and grounding protection;
- HVAC systems with medical-grade air filtration and pressure control;
- Clean water supply and wastewater treatment systems;
- Medical gas distribution systems;
- Fire detection and firefighting systems;

- Telecommunications and nurse call systems;
- Building automation and security systems.

All systems are installed and integrated to meet healthcare operational standards and ensure uninterrupted service during emergencies.

d. Construction of Supporting Facilities

Supporting facilities are developed to ensure the hospital can operate effectively and efficiently. These may include:

- Parking areas and internal roads;
- Waste storage and medical waste management facilities;
- Wastewater treatment plants (WWTP/IPAL);
- Utility buildings and generator rooms;
- Water reservoirs and pump houses;
- Staff accommodations and dormitories;
- Cafeterias, prayer rooms, and public waiting areas;
- Landscaping and green open spaces;
- Ambulance access routes and emergency assembly points.

These supporting facilities contribute to operational continuity, environmental compliance, and user comfort.

### 3.3.3 Operation

#### 3.3.3.1 Operational Labor Recruitment

Currently, Rumah Sakit Dr. H. Marzoeqi Mahdi (RSMM) employs a total of 767 personnel, consisting of 303 male employees (39.5%) and 464 female employees (60.5%). The existing workforce comprises healthcare professionals, including specialist doctors, general practitioners, nurses, pharmacists, allied health professionals, and supporting administrative and operational staff.

As part of the hospital redevelopment and expansion programme, RSMM plans to recruit additional personnel to support the increased service capacity of the new facilities. Based on the current workforce planning, the Project will require an additional 771 personnel, including healthcare workers and non-healthcare support staff. Following completion of the recruitment process, the total workforce is projected to reach approximately 1,538 employees.

The existing workforce profile has been disaggregated by gender to provide the baseline for implementation and monitoring of the Project's Gender Action Plan (GAP). The gender

composition of the additional workforce has not yet been determined and will be established during the recruitment process based on operational requirements, workforce planning, qualifications, and merit-based selection. Recruitment will be undertaken in accordance with the principles of equal employment opportunity and non-discrimination, while encouraging women's participation in professional and leadership positions, including specialist medical services where qualified female candidates are available.

The gender-disaggregated composition of the existing workforce and the projected workforce expansion are presented in Table 3.13

**Table 3.15. Eksisting and Planned Operational Workforce**

| <b>Workforce Category</b>     | <b>Male</b> | <b>Female</b> | <b>Existing Workforce</b> | <b>Planned Additional Workforce</b> | <b>Projected Total Workforce</b> |
|-------------------------------|-------------|---------------|---------------------------|-------------------------------------|----------------------------------|
| <b>Healthcare Workers</b>     | 193         | 396           | 589                       | 553                                 | 1,142                            |
| <b>Non-Healthcare Workers</b> | 110         | 68            | 178                       | 218                                 | 396                              |
| <b>Total</b>                  | <b>303</b>  | <b>464</b>    | <b>767</b>                | <b>771</b>                          | <b>1,538</b>                     |

Sumber: RS Marzoeqi Mahdi, 2026

*Note: The gender distribution of the additional workforce has not yet been determined and will depend on operational requirements, workforce planning, and merit-based recruitment. Recruitment will be undertaken in accordance with the principles of equal employment opportunity and non-discrimination.*

### 3.3.3.2 Hospital Operation and Maintenance

The development of Dr. H. Marzoeqi Mahdi Hospital into a Primary Teaching Hospital (RSPPU) includes the upgrading of core and supporting facilities and infrastructure, the optimization of the zonation of psychiatric (Figure 3.10, Blue & Purple Area) and non-psychiatric services (Figure 3.10, Red Area), and the development of the hospital as a teaching hospital (Figure 3.10, Yellow Area) to serve as a venue for medical education, medical staff training, and hospital human resource development. This development is being carried out to transform Dr. Marzoeqi Mahdi Hospital into a Smart Hospital and Green Hospital, to integrate comprehensive services, and to establish hospital as the Primary Teaching Hospital of the State Faculty of Medicine that meets the standards of a Teaching Hospital.



Figure 3.11. Zoning Plan of Development of the Dr. H. Marzoeki Mahdi Hospital

The details of hospital operations and maintenance activities as part of the development of Dr. H. Marzoeki Mahdi Hospital include:

### Core Activities

#### Emergency Installation Services (IGD)

Emergency installation operates in similar manner with the current existing services, including patient triage and provision of emergency care, such as resuscitation, medical emergencies, and other emergencies (pediatric and obstetric emergencies, psychiatric emergencies, and drug-related emergencies).

As part of these development efforts, emergency installation services will be moved into a more integrated zones with clear distinction between psychiatric and non-psychiatric care following the masterplan design, which will improve the effectiveness of patient care.

#### a. Outpatient Installation Services (Rawat Jalan)

Outpatient services will also operate in similar manner with the current existing services. Outpatient services are divided into four types of medical services, namely:

- Specialist Outpatient Clinics (Psychiatric and Non-Psychiatric)
- General Clinic

- Psychology Clinic
- Medical Check-Up

The Psychiatry Outpatient Clinic consists of Adult Psychiatry, Child & Adult Psychiatry, Psychogeriatric Clinic, Anxiety and Depression Clinic, CLP Clinic, Psychology Clinic, Assessment Center, Nursing, NAPZA Clinic, and HIV/VCT/PMTCT Clinic.

Meanwhile, the Non-Psychiatric Outpatient Clinics consist of the Neurology Clinic, Internal Medicine Clinic, Cardiology & Vascular Clinic, Integrated Diabetes Clinic, Pediatrics Clinic, ENT Clinic, Ophthalmology Clinic, Pulmonology Clinic, Obstetrics & Gynecology Clinic, Surgery Clinic, Dermatology Clinic, Occupational Therapy Clinic, and Dental & Oral Clinic.

As part of these development efforts, outpatient services will be moved into a more integrated zones with clear distinction between psychiatric and non-psychiatric care following the masterplan design, which will improve the effectiveness of patient care.

b. Inpatient Installation Services (Rawat Inap)

Inpatient services will also operate in similar manner with the current existing services. Inpatient services are divided into three types of medical services, namely:

- Psychiatric Inpatient Care
- Inpatient Treatment for Substance Abuse (NAPZA)
- Non-Psychiatric Inpatient Care (General)

The development of Dr. H. Marzoeqi Mahdi Hospital involves increasing the inpatient bed capacity from 590 beds to 800 beds. Details regarding the increase in the number of beds for the hospital's operations are shown in the following table.

**Table 3.16. Bed Capacity Comparison (Existing and Development)**

| Existing    |                | Development |                |
|-------------|----------------|-------------|----------------|
| Category    | Number of Beds | Category    | Number of Beds |
| Psychiatric |                | Psychiatric | 320            |
| General     |                | General     | 480            |
| Total       | 590            | Total       | 800            |

*Source: Dr. H. Marzoeqi Mahdi Hospital Masterplan, 2026*

c. Teaching Hospital

The development of Dr. H. Marzoeqi Mahdi Hospital as a Primary Teaching Hospital (RSPPU) aims to provide specialist and subspecialist medical training programs, with students primarily from the Faculty of Medicine at Bogor Agricultural University (IPB).

The number of students in the specialist and subspecialist medical education programs will be increased gradually, with an estimated maximum of approximately 470 students once the hospital is fully operational.

d. Auditorium

Auditorium serves as facilities to support the hospital's role as both a healthcare facility and an educational institution. The auditorium will be primarily used for large-learning activities such as general lectures, seminars and symposium, conferences, workshop interdisciplinary discussions involving doctors and healthcare professionals, etc. The auditorium will have the capacity to accommodate 1.000 people.

e. Museum & Heritage Retail/Commercial Area

The proposed Museum & Heritage Retail/Commercial Area will serve as an educational facility that preserves and showcases the historical significance of RSMM while providing public access for patients, visitors, students, and the wider community. The facility is intended to support heritage conservation through adaptive reuse and interpretation of the hospital's cultural assets, while also accommodating complementary commercial activities that enhance visitor experience.

The redevelopment project will affect several existing commercial facilities and tenants currently operating within the hospital complex, including cooperative-managed food stalls, the cooperative office, rehabilitation café, and other small commercial vendors that provide supporting services to patients, visitors, and hospital staff. Some of these facilities are located within the proposed development footprint and will therefore require temporary relocation during the phased redevelopment programme.

To minimize socioeconomic impacts associated with temporary relocation, RSMM will implement a Commercial Tenant Relocation and Livelihood Restoration Plan. The Plan assesses the potential impacts on affected commercial tenants and service providers, establishes procedures for consultation and relocation, and proposes livelihood restoration measures consistent with the AIIB Environmental and Social Standard (ESS2), with the objective of avoiding or minimizing disruption to business activities and restoring affected livelihoods during Project implementation.

Following completion of the redevelopment, new commercial spaces, including the Museum & Heritage Retail/Commercial Area and other designated retail facilities, will provide opportunities for relocated tenants to resume their business activities within the upgraded hospital environment, subject to the hospital's operational requirements and applicable management arrangements.

**Supporting Activities****a. Electricity Supply**

The primary source of electricity for the development of Dr. H. Marzoeki Mahdi Hospital comes from the PLN grid. In addition to this primary source, the hospital has also installed a generator set as a backup power source. Currently, the backup power comes from a single generator set with a capacity of 675 kVA. The hospital plans to add more generator sets to meet its electricity needs.

**b. Clean Water Supply and Waste Water management**

Planned clean water requirement for the development of Dr. H. Marzoeki Mahdi are obtained from the Regional Drinking Water Company/*Perusahaan Daerah Air Minum* (PDAM). The volume of clean water requirement for development activities are calculated by considering the increasing number of beds for inpatient care, supporting activities, and utilities. The volume requirement of clean water (m<sup>3</sup>/day) and wastewater clean water (m<sup>3</sup>/day) for the existing condition and development of Dr. H. Marzoeki Mahdi Hospital is calculated below.

Table 3.17t

| No.        | Type                                           | Quantity/<br>Capacity | Unit          | Standard | Unit         | Water<br>Demand     | Wastewater<br>(80%) |
|------------|------------------------------------------------|-----------------------|---------------|----------|--------------|---------------------|---------------------|
|            |                                                |                       |               |          |              | m <sup>3</sup> /day | m <sup>3</sup> /day |
| <b>A</b>   | <b>Main Activities (Medical Service Units)</b> |                       |               |          |              |                     |                     |
| 1          | Inpatient Care                                 | 590                   | bed           | 400      | L/bed/day    | 236                 | 188.80              |
| 2          | Outpatient Care                                | 329                   | person/day    | 5        | L/person     | 1.645               | 1.32                |
| 3          | Emergency Care                                 | 39                    | bed           | 50       | L/bed/day    | 1.95                | 1.56                |
| <b>B</b>   | <b>Supporting Activities</b>                   |                       |               |          |              |                     |                     |
| <b>B.1</b> | <b>Medical Service Support</b>                 |                       |               |          |              |                     |                     |
| 1          | Hemodialysis                                   | 4                     | bed           | 300      | L/bed/day    | 1.2                 | 0.96                |
| 2          | Nutrition Installation/Pantry                  | 489                   | bed           | 20       | L/bed/day    | 9.78                | 7.82                |
| 3          | Linen/Laundry Installation                     | 100                   | kg/day        | 25       | L/kg         | 2.5                 | 2                   |
| 4          | Pharmacy Installation                          | 54                    | person        | 120      | L/person/day | 6.48                | 5.18                |
| 5          | Laboratory                                     | 362                   | procedure/day | 100      | L/procedure  | 36.2                | 28.96               |
| 6          | CSSD (Sterilization)                           | 2                     | procedure/day | 1500     | L/procedure  | 3                   | 2.4                 |
| 7          | Mortuary Services                              | 1                     | person/day    | 130      | L/person     | 0.13                | 0.10                |
| <b>B.2</b> | <b>Domestic Support</b>                        |                       |               |          |              |                     |                     |
| 1          | Office Activities                              | 767                   | person        | 50       | L/person/day | 38.35               | 30.68               |
| 2          | Visitor Activities                             | 138                   | person        | 10       | L/person/day | 1.38                | 1.10                |
| 3          | Canteen                                        | 64                    | person        | 15       | L/person/day | 0.96                | 0.77                |
| 4          | Mosque Activities (Ablution)                   | 1055                  | person        | 5        | L/person/day | 5.275               | 4.22                |
| 5          | Plant Watering                                 | 55,176.0              | m2            | 5        | L/m2/day     | 275.88              |                     |
|            | <b>TOTAL</b>                                   |                       |               |          |              | <b>620.73</b>       | <b>275.88</b>       |

Table 3.18. Clean Water Requirement and Wastewater for Development of Dr. H. Marzoeqi Mahdi Hospital

| No. | Type                                              | Quantity/<br>Capacity | Unit   | Standard | Unit         | Water Demand | Wastewater (80% |
|-----|---------------------------------------------------|-----------------------|--------|----------|--------------|--------------|-----------------|
|     |                                                   |                       |        |          |              | m³/day       | m³/day          |
| A   | Main Activities (Medical Service Units)           |                       |        |          |              |              |                 |
| 1   | Inpatient Care*                                   |                       |        |          |              |              |                 |
| a   | Psychiatric Beds                                  | 210                   | Bed    | 450      | L/Bed/Day    | 94.5         | 75.60           |
| b   | UPIP P (Intensive Psychiatric Care Unit - Female) | 15                    | Bed    | 450      | L/Bed/Day    | 6.75         | 5.40            |
| c   | UPIP L (Intensive Psychiatric Care Unit - Male)   | 15                    | Bed    | 450      | L/Bed/Day    | 6.75         | 5.40            |
| d   | Psychiatric Infection                             | 14                    | Bed    | 450      | L/Bed/Day    | 6.3          | 5.04            |
| e   | Psychogeriatrics                                  | 20                    | Bed    | 450      | L/Bed/Day    | 9            | 7.20            |
| f   | Substance Abuse (Napza) Beds                      | 36                    | Bed    | 450      | L/Bed/Day    | 16.2         | 12.96           |
| g   | General Beds                                      | 384                   | Bed    | 300      | L/Bed/Day    | 115.2        | 92.16           |
| h   | ICU                                               | 50                    | Bed    | 300      | L/Bed/Day    | 15           | 12.00           |
| i   | Non-Psychiatric Infection                         | 30                    | Bed    | 300      | L/Bed/Day    | 9            | 7.20            |
| j   | Geriatrics                                        | 20                    | Bed    | 300      | L/Bed/Day    | 6            | 4.80            |
| k   | Neonatal (Perinatology)                           | 6                     | Bed    | 300      | L/Bed/Day    | 1.8          | 1.44            |
|     | Subtotal Inpatient Care                           | 800                   |        |          |              | 286.5        | 229.2           |
| 2   | Outpatient Clinic                                 | 1200                  | Person | 5        | L/Person/Day | 6            | 4.80            |
| 3   | Non-Psychiatric Emergency Dept. (IGD)             | 117                   | Person | 5        | L/Person/Day | 0.585        | 0.47            |

| No.        | Type                                                                     | Quantity/<br>Capacity | Unit      | Standard | Unit            | Water Demand        | Wastewater (80%)    |
|------------|--------------------------------------------------------------------------|-----------------------|-----------|----------|-----------------|---------------------|---------------------|
|            |                                                                          |                       |           |          |                 | m <sup>3</sup> /day | m <sup>3</sup> /day |
| 4          | Psychiatric Emergency Dept. (IGD) / PONEK (Obstetric-Neonatal Emergency) | 69                    | Person    | 5        | L/Person/Day    | 0.345               | 0.28                |
|            | <b>Subtotal A</b>                                                        | <b>2186</b>           |           |          |                 | <b>293.43</b>       | <b>234.74</b>       |
| <b>B</b>   | <b>Supporting Activities</b>                                             |                       |           |          |                 |                     |                     |
| <b>B.1</b> | <b>Medical Service Support</b>                                           |                       |           |          |                 |                     |                     |
| 1          | Central Surgical Installation                                            | 10                    | Procedure | 300      | L/Procedure/Day | 3                   | 2.40                |
| 2          | Hemodialysis                                                             | 20                    | Procedure | 120      | L/Procedure/Day | 2.4                 | 1.92                |
| 3          | CSSD / Sterilization                                                     | 2                     | Procedure | 1500     | L/Procedure/Day | 3                   | 2.40                |
| 4          | Central Laboratory                                                       | 1                     | Unit      | 2000     | L/Unit/Day      | 2                   | 1.60                |
| 5          | Radiology / Imaging                                                      | 219                   | Person    | 10       | L/Person/Day    | 2.19                | 1.75                |
| 6          | Medical Rehabilitation (Hydrotherapy)                                    | 120                   | Person    | 15       | L/Person/Day    | 1.8                 | 1.44                |
| 7          | Pharmacy / Pharmacy Depot                                                | 219                   | Person    | 10       | L/Person/Day    | 2.19                | 1.75                |
|            | <b>Subtotal B.1</b>                                                      | <b>591</b>            |           |          |                 | <b>16.58</b>        | <b>13.26</b>        |
| <b>B.2</b> | <b>Domestic Support**</b>                                                |                       |           |          |                 |                     |                     |
| 1          | Staff Activities                                                         | 771                   | Person    | 50       | L/Person/Day    | 38.55               | 30.84               |
| 2          | Visitor Activities                                                       | 219                   | Person    | 10       | L/Person/Day    | 2.19                | 1.75                |
| 3          | Clinical Clerkship (Coass) Student Activities                            | 1051                  | Person    | 50       | L/Person/Day    | 52.55               | 42.04               |

| No.      | Type                                                         | Quantity/<br>Capacity | Unit           | Standard | Unit                  | Water Demand        | Wastewater (80%)    |
|----------|--------------------------------------------------------------|-----------------------|----------------|----------|-----------------------|---------------------|---------------------|
|          |                                                              |                       |                |          |                       | m <sup>3</sup> /day | m <sup>3</sup> /day |
| 4        | Canteen                                                      | 64                    | Seat           | 15       | L/seat                | 0.96                | 0.77                |
| 5        | Mosque Activities (Ablution)                                 | 1093                  | Person         | 5        | L/Person/Day          | 5.465               | 4.37                |
|          | <b>Subtotal B.2</b>                                          | <b>3198</b>           |                |          |                       | <b>99.715</b>       | <b>79.77</b>        |
|          | <b>TOTAL A + B</b>                                           |                       |                |          |                       | <b>409.7</b>        | <b>327.8</b>        |
| <b>C</b> | <b>Training and Clinical Clerkship (Coass) Dormitory**</b>   |                       |                |          |                       |                     |                     |
| 1        | Training dormitory and clinical clerkship (coass) activities | 500                   | Person         | 120      | L/Person/Day          | 60                  | 48.00               |
|          | <b>Subtotal C</b>                                            | <b>500</b>            |                |          |                       | <b>60</b>           | <b>48.00</b>        |
|          | <b>TOTAL A + B + C</b>                                       |                       |                |          |                       | <b>469.7</b>        | <b>375.78</b>       |
| <b>D</b> | <b>Utilities (Wastewater Recycling from A + B + C)</b>       |                       |                |          |                       |                     |                     |
| 1        | Plant Watering***                                            | 69,030.0              | m <sup>2</sup> | 5        | L/m <sup>2</sup> /Day | 345.15              | 0                   |
| 2        | Toilet Flushing**                                            | 7,427.0               | Flush          | 6        | L/flush/Day           | 44.56               | 0.00                |
|          | <b>Subtotal D</b>                                            | <b>76,457.0</b>       |                |          |                       | <b>389.7</b>        | <b>-</b>            |
|          | <b>TOTAL A + B + C + D</b>                                   |                       |                |          |                       | <b>859.4</b>        | <b>375.78</b>       |

Notes:

\*) The water volume for sanitation/hygiene already accounts for water needs for linen washing, nutrition kitchen, cleaning/watering, and other purposes. (Ministry of Health Regulation 7/2019)

\*\*) SNI 03-7065-2005 Procedures for Plumbing System Planning

\*\*\*) Public Works Ministerial Regulation No. 5 of 2012, Guidelines for Tree Planting on Road Network Systems

The minimum WWTP capacity is the wastewater generation x 1.2 (Safety Factor) = 394 m<sup>3</sup>/day

- **Total Water Demand and Total Wastewater Generation**

Under the existing condition, the hospital's total water demand is recorded at 620.73 m<sup>3</sup>/day, which generates a total wastewater volume of 275.88 m<sup>3</sup>/day (calculated at 80% of water demand). Under the development plan, the core hospital operations – comprising the Main Activities (Medical Service Units) and Supporting Activities (Categories A and B) – are projected to require 409.73 m<sup>3</sup>/day of water, generating 327.78 m<sup>3</sup>/day of wastewater. This represents an increase of approximately 51.90 m<sup>3</sup>/day (about 19%) in wastewater generation compared to the existing condition, consistent with the expansion of medical service capacity. When the Training and Clinical Clerkship (Coass) Dormitory (Category C) is included, total development water demand rises to 469.73 m<sup>3</sup>/day, with total wastewater generation of 375.78 m<sup>3</sup>/day – an increase of approximately 99.90 m<sup>3</sup>/day (about 36%) over the existing condition. A further utility component (Category D, water reuse for landscape irrigation and toilet flushing) has been designed to be fully supplied from recycled effluent generated by Categories A, B and C, and therefore does not add any further net wastewater load. Including Category D, the development's total gross water demand reaches 859.44 m<sup>3</sup>/day, while total wastewater generation for the development as a whole remains at 375.78 m<sup>3</sup>/day, equal to the combined generation of Categories A, B and C.

- **Total Bed Capacity**

In terms of inpatient bed capacity, the existing condition provides 590 beds for inpatient care (Rawat Inap), together with 39 beds allocated for emergency care. Under the development plan, total inpatient bed capacity increases to 800 beds, comprising a combination of psychiatric beds (Psychiatric Beds, UPIP Male/Female, Psychiatric Infection, Psychogeriatrics, Substance Abuse/Napza) and general beds (General Beds, ICU, Non-Psychiatric Infection, Geriatrics, and Neonatal/Perinatology). This represents a net increase of 210 beds (approximately 35.6%) compared to the existing condition, reflecting the hospital's transition toward a combined specialized psychiatric and general hospital service model. Emergency care capacity is also expanded and reorganized into separate Non-Psychiatric Emergency and Psychiatric Emergency/PONEK (obstetric-neonatal emergency) services, estimated on the basis of the corresponding bed capacities.

- **Total Office/Administrative Support Activity**

The number of staff associated with office and administrative support activities is recorded at 767 people under the existing condition, with an associated water demand of 38.35 m<sup>3</sup>/day and wastewater generation of 30.68 m<sup>3</sup>/day. Under the development plan, the equivalent Staff Activities category records 771 people, with a water demand

of 38.55 m<sup>3</sup>/day and wastewater generation of 30.84 m<sup>3</sup>/day. This is a marginal increase of 4 people (about 0.5%) compared to the existing condition, indicating that the projected office/administrative staffing level and its associated water demand remain essentially unchanged between the existing condition and the development plan, even as overall medical service capacity expands.

- Addition of Clinical Clerkship (Coass) Students and Dormitory Facility

A key difference introduced in the development plan is the addition of academic-related activities that do not exist under the current condition. First, within the Domestic Support category (B.2), a component for Clinical Clerkship (Coass) Student Activities is introduced, covering 1,051 people with a water demand of 52.55 m<sup>3</sup>/day and wastewater generation of 42.04 m<sup>3</sup>/day. Second, an entirely new facility category, Category C – Training and Clinical Clerkship (Coass) Dormitory, is introduced to accommodate coass residents on a residential basis. The dormitory occupancy is 500 people, with a corresponding water demand of 60 m<sup>3</sup>/day, reflecting the higher per-capita water consumption standard applied to dormitory/residential use (120 L/person/day) compared to daytime academic activity (50 L/person/day). Neither the coass student activity component nor the dormitory facility exists in the current condition, and together they still constitute a significant new water demand and wastewater load that must be specifically accounted for in the development plan.

- Wastewater Treatment Plant (IPAL) Capacity

The hospital's existing Wastewater Treatment Plant (WWTP) with Sequencing Batch Reactor (SBR) System has a treatment capacity of 408 m<sup>3</sup>/day (equivalent to 34 m<sup>3</sup> x 4 cycles x 3 tanks). Applying a safety factor of 1.2 to the projected wastewater generation from the core development activities (Categories A and B, i.e. main medical services and supporting activities) of 327.78 m<sup>3</sup>/day yields a required minimum treatment capacity of approximately 393.3 m<sup>3</sup>/day, which remains below the existing IPAL capacity of 408 m<sup>3</sup>/day. This confirms that the existing IPAL remains adequate to accommodate the wastewater generated by the core hospital development activities (Categories A and B) without requiring capacity expansion. However, the wastewater generated by the Training and Clinical Clerkship (Coass) Dormitory (Category C) has approximately 48 m<sup>3</sup>/day, is still not included in this calculation and remains outside the accommodable capacity of the existing WWTP once the core development load is already accounted for. Consequently, the development plan continues to provide for the construction of a separate, dedicated wastewater treatment facility to serve the Training and Clinical Clerkship (Coass) Dormitory, independent from the existing WWTP that continues to serve the main hospital and its supporting activities – albeit now sized for a smaller dormitory wastewater load than previously estimated.

Table 3.19. Summary Comparison of Water Demand and Wastewater Between The Existing Condition and The Development Plan

| Parameter                   | Existing Condition                     | Development Plan                                                                                             |
|-----------------------------|----------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Total Water Demand          | 620.73 m <sup>3</sup> /day             | 409.73 m <sup>3</sup> /day (A+B) / 469.73 m <sup>3</sup> /day (A+B+C) / 859.44 m <sup>3</sup> /day (A+B+C+D) |
| Total Wastewater Generation | 275.88 m <sup>3</sup> /day             | 327.78 m <sup>3</sup> /day (A+B) / 375.78 m <sup>3</sup> /day (A+B+C, final total)                           |
| Total Inpatient Beds        | 590 beds                               | 800 beds                                                                                                     |
| Office/Staff Activity       | 767 people (38.35 m <sup>3</sup> /day) | 771 people (38.55 m <sup>3</sup> /day)                                                                       |
| Coass Student Activity      | – (none)                               | 1,051 people (52.55 m <sup>3</sup> /day)                                                                     |
| Coass/Training Dormitory    | – (none)                               | 500 people (60 m <sup>3</sup> /day)                                                                          |
| Existing IPAL Capacity      | 408 m <sup>3</sup> /day                | 408 m <sup>3</sup> /day (serves A+B only)                                                                    |

## c. Solid Waste Management

**Non-Hazardous Waste**

Under the existing condition, actual domestic solid waste monitoring data for 2025 records a total generation of 261,856.3 kg/year, equivalent to an average of 21,821.4 kg/month (approximately 727.4 kg/day). The record is stable throughout the year, ranging from 19,234 kg in November to 24,288 kg in March, with a coefficient of variation of only 7.1% and near-identical quarterly totals, indicating that the facility experiences no significant seasonal fluctuation in waste generation. Under the development plan, total domestic solid waste generation is estimated at 952.1 kg/day, equivalent to 28,563 kg/month (approximately 342,756 kg/year). This represents an increase of approximately 224.7 kg/day or 30.9% relative to the existing condition. The estimated solid waste generation resulting from existing condition and development phase is shown in the following table.

Table 3.20. Existing Solid Waste (Non-Hazardous Waste) at Marzoeqi Mahdi Hospital

| Month    | Domestic Waste Data for 2025 (kg/month) |
|----------|-----------------------------------------|
| January  | 21,322.00                               |
| February | 20,152.30                               |
| March    | 24,288.00                               |
| April    | 21,222.00                               |
| May      | 22,432.00                               |
| June     | 22,848.00                               |
| July     | 19,965.90                               |
| August   | 21,491.70                               |

| Month                  | Domestic Waste Data for 2025 (kg/month) |
|------------------------|-----------------------------------------|
| September              | 23,125.40                               |
| October                | 23,652.00                               |
| November               | 19,234.00                               |
| December               | 22,123.00                               |
| <b>Total (kg/year)</b> | <b>261,856.30</b>                       |

Source: RS Marzoeqi mahdi, 2026

**Table 3.21. Solid Waste Estimation of The Development Phase at Marzoeqi Mahdi Hospital**

| No. | Generation Source                                                            | Waste Category                   | Number of Users/Units | Generation Factor | Unit | Solid Waste (kg/day) | Solid Waste (kg/month) | Remarks                                                |
|-----|------------------------------------------------------------------------------|----------------------------------|-----------------------|-------------------|------|----------------------|------------------------|--------------------------------------------------------|
| 1   | Inpatients (domestic: food waste, packaging, paper)*                         | Domestic organic & inorganic     | 800                   | 0.40              | kg   | <b>320.00</b>        | <b>9,600.00</b>        | Food remains, non-hazardous medicine packaging, tissue |
| 2   | Visitors & Patient Attendants                                                | Inorganic domestic               | 400                   | 0.20              | kg   | <b>80.00</b>         | <b>2,400.00</b>        | 50% of patients have an accompanying attendant         |
| 3   | Outpatients & Polyclinic Visitors                                            | Inorganic domestic               | 1,200                 | 0.10              | kg   | <b>120.00</b>        | <b>3,600.00</b>        | Packaging waste, paper, tissue                         |
| 4   | Hospital Staff / Employees (office, administration, non-procedural medical)  | Domestic paper & inorganic       | 771                   | 0.10              | kg   | <b>77.10</b>         | <b>2,313.00</b>        | Hospital staff                                         |
| 5   | Kitchen / Nutrition Installation (food waste, raw material packaging)        | Organic (food waste) & packaging | 800                   | 0.30              | kg   | <b>240.00</b>        | <b>7,200.00</b>        | Inpatients                                             |
| 6   | Garden, Yard & Parking Area                                                  | Leaf litter & inorganic waste    | 1                     | 50.00             | kg   | <b>50.00</b>         | <b>1,500.00</b>        | Estimated for a large hospital landscape area          |
| 7   | Non-Hazardous Pharmaceutical Packaging (cardboard, regular medicine plastic) | Inorganic (cardboard, plastic)   | 1                     | 40.00             | kg   | <b>40.00</b>         | <b>1,200.00</b>        | Estimated for pharmacy unit & warehouse                |

| No.                                                    | Generation Source                                      | Waste Category             | Number of Users/Units | Generation Factor | Unit | Solid Waste (kg/day) | Solid Waste (kg/month) | Remarks                                |
|--------------------------------------------------------|--------------------------------------------------------|----------------------------|-----------------------|-------------------|------|----------------------|------------------------|----------------------------------------|
| 8                                                      | Office & Administration (stationery, paper, documents) | Inorganic (paper, plastic) | 1                     | 25.00             | kg   | 25.00                | 750.00                 | Front office, medical records, finance |
| <b>Total Estimated Domestic Solid Waste Generation</b> |                                                        |                            |                       |                   |      | <b>952.10</b>        | <b>28,563.00</b>       |                                        |

Notes:

\*) The domestic waste generation factor for inpatients is assumed similar to a permanent residence, i.e. 0.4 kg/person/day, referring to SNI 19-3983-1995

\*\*)

The density of mixed hospital waste is assumed to be 200 kg/m<sup>3</sup> (0.2 kg/L) for weight-to-volume conversion, in accordance with SNI 3242:2008 for mixed urban waste

The development plan's estimated total solid waste generation of 952.1 kg/day is derived from eight distinct sources, each calculated using a specific generation factor. The largest contributor is inpatients (domestic organic and inorganic waste such as food remains, non-hazardous medicine packaging, and tissue), estimated at 320 kg/day (about 34% of the total), based on 800 inpatients at 0.4 kg/person/day. The second largest source is the kitchen/nutrition installation (food waste and raw-material packaging), estimated at 240 kg/day (about 25%). This is followed by outpatients and poly

clinic visitors at 120 kg/day (about 13%), visitors and patient attendants at 80 kg/day (about 8%), hospital staff (771 employees, office/administration and non-procedural medical) at 77.1 kg/day (about 8%), garden, yard and parking-area waste at 50 kg/day (about 5%), non-hazardous pharmaceutical packaging at 40 kg/day (about 4%), and office and administration waste (stationery, paper, documents) at 25 kg/day (about 3%). This underscores the importance of adequate temporary storage and segregated collection capacity for organic and food-related domestic waste as inpatient capacity expands under the development plan.

Table 3.22. Summary Comparison of Solid (Domestic) Waste Generation Between The Existing Condition and The Development Plan

| Parameter                  | Existing Condition (2025 actual data) | Development Plan (calculated estimate)    |
|----------------------------|---------------------------------------|-------------------------------------------|
| Total Annual Generation    | 261,856.3 kg/year                     | ≈ 342,756 kg/year                         |
| Average Monthly Generation | 21,821.4 kg/month                     | 28,563 kg/month                           |
| Average Daily Generation   | 727.4 kg/day                          | 952.1 kg/day (≈ 4.76 m <sup>3</sup> /day) |

| Parameter                   | Existing Condition (2025 actual data)    | Development Plan (calculated estimate) |
|-----------------------------|------------------------------------------|----------------------------------------|
| Inpatient Bed Capacity      | 590 beds                                 | 800 beds                               |
| Waste Intensity per Bed     | 1.23 kg/bed/day                          | 1.19 kg/bed/day                        |
| Largest Contributing Source | Not itemized (aggregate monitoring data) | Inpatients — 320 kg/day (≈ 34%)        |

### **Hazardous Waste**

Under the existing condition, the total estimated hazardous waste (B3) generation across all identified waste types amounts to 2,264.75 kg/month. Under the development plan, the total estimated hazardous waste generation increases substantially to 911.4 kg/day, equivalent to approximately 27,583.25 kg/month. This represents an increase of 1,118% compared to the existing condition. This significant increase is primarily driven by the expansion of medical service capacity (from 590 to 800 inpatient beds), the introduction of a standardized infectious-waste generation factor (1.131 kg/bed/day, referencing published hospital solid-medical-waste data), and the addition of new waste-generating activities such as oncology-related services, that were not explicitly quantified under the existing condition. The estimated hazardous waste resulting from existing condition and development phase is shown in the following table.

**Table 3.23. Existing Hazardous Waste at Marzoeqi Mahdi Hospital**

| No. | Hazardous Waste Type                                                | Hazardous Waste Code | Source                                                                                                                                  | Hazardous Waste Quantity (Kg) - Estimated Waste Generation (Kg/Month) |
|-----|---------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| 1   | Used Batteries                                                      | A102d                | General & Psychiatric Inpatient Ward, General & Psychiatric Outpatient Ward, Support Services                                           | 5.05                                                                  |
| 2   | Clinical Waste with Infectious Characteristics                      | A337-1               | General & Psychiatric Inpatient Ward, General & Psychiatric Outpatient Ward, ER, OR, Delivery Room, ICU, Perinatology, Psychiatric Ward | 1,558.40                                                              |
| 3   | Covid-19 Waste, Waste from rapid test and antigen swab examinations | A337-1               | Drive-thru, ER, Laboratory, Pemping, Abimanyu                                                                                           | 363.00                                                                |
| 4   | Covid-19 Vaccination Waste                                          | A337-1               | Vaccination Room                                                                                                                        | 8.00                                                                  |
| 5   | Expired Chemicals                                                   | A337-3               | Pharmacy Warehouse                                                                                                                      | 5.00                                                                  |
| 6   | Laboratory Equipment                                                | A337-4               | Laboratory                                                                                                                              | 2.10                                                                  |

|    |                                                         |        |                                                                       |                 |
|----|---------------------------------------------------------|--------|-----------------------------------------------------------------------|-----------------|
|    | Contaminated with Hazardous Waste                       |        |                                                                       |                 |
| 7  | Hazardous Waste Packaging                               | B104d  | Hemodialysis                                                          | 2.00            |
| 8  | Pharmaceutical waste (expired pharmaceutical materials) | A337-2 | Pharmacy                                                              | 10.00           |
| 9  | Pharmaceutical product packaging                        | B337-1 | Pharmacy Installation                                                 | 4.20            |
| 10 | WWTP sludge                                             | B337-2 | Wastewater Treatment Plant (WWTP)                                     | 200.00          |
| 11 | Electronic waste                                        | B107d  | IPSRs (Facility Maintenance Unit), SIRS (Hospital Information System) | 100.00          |
| 12 | Hazardous waste-contaminated waste (Used X-ray film)    | A108d  | Radiology                                                             | 2.00            |
| 13 | Used Oil                                                | B105d  | WWTP, Generator, Vehicle Pool, Boiler                                 | 5.00            |
|    | <b>Total Generation</b>                                 |        |                                                                       | <b>2,264.75</b> |

**Table 3.24. Hazardous Waste Estimation of The Development Phase at Marzoeqi Mahdi Hospital**

| No. | Waste Type                                            | Waste Code (Government Regulation 22/2021) | Hazardous Waste Name                                                                                                                            | Source/Generating Unit                                                                                        | Generation (kg/month) |
|-----|-------------------------------------------------------|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------|
| 1   | Used batteries/accumulators                           | A102d                                      | Used batteries                                                                                                                                  | General and Psychiatric Inpatient, General and Psychiatric Outpatient, Supporting Services                    | 5.05                  |
| 2   | Laboratory waste containing hazardous substances (B3) | A106d                                      | Laboratory chemical waste (expired reagents, fixative solutions, solvents)                                                                      | Laboratory                                                                                                    | 20.00                 |
| 3   | Hazardous-substance-contaminated waste                | A108d                                      | Hazardous waste-contaminated waste                                                                                                              | Radiology                                                                                                     | 20.00                 |
| 4   | Clinical waste with infectious characteristics        | A337-1                                     | Sharps waste (syringe needles, ampoules, scalpels, etc.), Infectious waste (gauze, bandages, cotton, used PPE, non-pathological tissue remains) | All inpatient wards, Emergency Dept., Operating Room, Polyclinic, Laboratory, Hemodialysis, CSSD & Spoelhoeck | 27,144.00             |
| 5   | Expired pharmaceutical products                       | A337-2                                     | Pharmaceutical waste (expired/damaged medicine, leftover medicine, used vials/ampoules)                                                         | Pharmacy Installation, Pharmacy Depot, Dispensary                                                             | 30.00                 |
| 6   | Expired chemicals                                     | A337-3                                     | Expired chemicals                                                                                                                               | Pharmacy                                                                                                      | 18.00                 |

|                                                   |                                                                                                         |        |                                                                                                                                     |                                                                                                            |                  |
|---------------------------------------------------|---------------------------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|------------------|
| 7                                                 | Laboratory equipment contaminated with hazardous waste                                                  | A337-4 | Laboratory equipment, hazardous-waste-contaminated items                                                                            | Laboratory                                                                                                 | 20.00            |
| 8                                                 | Medical equipment containing heavy metals, including mercury (Hg), cadmium (Cd), and similar substances | A337-5 | Cytotoxic waste (leftover chemotherapy medicine & contaminated PPE), Waste containing heavy metals (X-ray developer/fixer, mercury) | Pharmacy Installation (chemotherapy drug mixing), Radiology (Conventional, Mammography, Panoramic, Dental) | 150.00           |
| 9                                                 | Used B3 packaging                                                                                       | B104d  | Used hazardous waste packaging                                                                                                      | Hemodialysis                                                                                               | 2.00             |
| 10                                                | Used lubricating oil                                                                                    | B105d  | Used oil                                                                                                                            | WWTP, Generator Set, Vehicle Pool, Boiler                                                                  | 5.00             |
| 11                                                | Electronic waste                                                                                        | B107d  | Electronic waste                                                                                                                    | IPSRS (Hospital Facility Maintenance Unit), SIRS (Hospital Information System)                             | 100.00           |
| 12                                                | Used pharmaceutical product packaging                                                                   | B337-1 | Pharmacy Warehouse, Pharmacy Installation                                                                                           | Pharmacy                                                                                                   | 9.20             |
| 13                                                | WWTP sludge                                                                                             | B337-2 | WWTP (Wastewater Treatment Plant)                                                                                                   | WWTP (Wastewater Treatment Plant)                                                                          | 50.00            |
| 14                                                | Used Filter from Air Pollution Control Facility                                                         | B109d  | Used Filter                                                                                                                         | Laboratory, Operating Room (OK), Isolation Room                                                            | 10.00            |
| <b>Total Estimated Hazardous Waste Generation</b> |                                                                                                         |        |                                                                                                                                     |                                                                                                            | <b>27,583.25</b> |

Comparing the hazardous waste inventories of the existing condition and the development plan shows that most hazardous waste types identified under the existing condition (e.g., used batteries/accumulators – A102d; expired chemicals – A337-3; laboratory equipment contaminated with hazardous waste – A337-4; used hazardous waste packaging – B104d; used pharmaceutical product packaging – B337-1; WWTP sludge – B337-2; electronic waste – B107d; hazardous waste-contaminated waste/used X-ray film – A108d; and used lubricating oil – B105d) continue to be generated under the development plan. However, the development plan introduces several additional hazardous waste types that are not present in the existing inventory, namely: (1) laboratory chemical waste containing hazardous substances (code A106d), comprising expired reagents, fixative solutions, and solvents from the laboratory; (2) expired pharmaceutical products (code A337-2), covering expired or damaged medicine, leftover medicine, and used vials/ampoules, now identified as a distinct waste stream separate from general expired chemicals; (3) medical equipment containing heavy metals, including mercury (Hg) and cadmium (Cd), and related cytotoxic waste (code A337-5), associated with the planned oncology (chemotherapy) service and radiology imaging (X-ray developer/fixer);

and (4) used filter waste from the air pollution control facility (code B109d), generated from the laboratory, operating room, and isolation room. In addition, the three separate infectious-waste entries recorded under the existing condition (general clinical infectious waste, Covid-19-related waste, and vaccination waste, all under code A337-1) are consolidated in the development plan into a single, standardized clinical infectious waste category covering sharps and infectious waste from all inpatient wards, emergency department, operating room, polyclinic, laboratory, hemodialysis, CSSD, and Spoelhoeck.

The existing Hazardous Waste Storage facility (TPS LB3) occupies a land area of 39.55 m<sup>2</sup>. In line with the significant increase in projected hazardous waste generation under the development plan, a new, larger TPS LB3 is planned, with a built-up area of 80.5 m<sup>2</sup>. Importantly, the new TPS LB3 will be constructed at a different location within the hospital site rather than expanding the existing facility in place. As a direct consequence, once the new TPS LB3 becomes operational, the existing TPS LB3 will be decommissioned and will no longer be used for hazardous waste storage.

Table 3.25. Summary Comparison of Hazardous Waste Generation Between The Existing Condition and The Development Plan

| Parameter                  | Existing Condition   | Development Plan                    |
|----------------------------|----------------------|-------------------------------------|
| Total B3 Waste Generation  | 2,264.75 kg/month    | ≈ 27,583.25 kg/month (911.4 kg/day) |
| New B3 Waste Types         | –                    | A106d, A337-2, A337-5, B109d        |
| TPS LB3 Area               | 39.55 m <sup>2</sup> | 80.5 m <sup>2</sup> (new location)  |
| Status of Existing TPS LB3 | In use               | Decommissioned / no longer used     |

d. Green Open Space (RTH)

The Green Open Space (RTH) provided as part of the Dr. H. Marzoeqi Mahdi development project was created by integrating green building concepts with the provision of dedicated Green Open Space areas. The Green Open Space area in the development plan covers 69,030 m<sup>2</sup> of the total development area of 221,218 m<sup>2</sup>, or 31% of the total planned development area.

e. Parking Activities

The estimated parking area requirement for the developed Dr. H. Marzoeqi Mahdi Hospital is 1386 unit of parking space, considering parking space requirement for patients and visitors, dormitory, and for education and training. Parking area will be

provided on-ground and basement, spread all around the hospital premises. The number of parking area is shown below.

**Table 3.26. Parking Space Availability**

| <b>Parking</b>                      | <b>Available Parking Area<br/>(Unit – Car)</b> |
|-------------------------------------|------------------------------------------------|
| On-Ground                           | 975                                            |
| Basement                            | 463                                            |
| <b>Total Available Parking Area</b> | <b>1438</b>                                    |

*Source: Dr. H. Marzoeki Mahdi Hospital Masterplan, 2026*

f. Standard Operating Procedures (SOP)

The Dr. H. Marzoeki Mahdi hospital has prepared a number of SOPs to provide guidance on the operational and maintenance of hospital facilities. SOPs that have been available in Dr. H Marzoeki Mahdi Hospital are:

1. SOP for Prevention and Handling of Hospital Infection
2. SOP for Hazardous Waste Transportation to Outside of Hospital
3. SOP for Prevention of Cross-Contamination
4. SOP for Non-Medical Waste Management
5. SOP for Clean Water and Drinking Water Sample Collection
6. SOP for Hazardous Waste Containment
7. SOP for Handling of Sharp Object Waste
8. SOP for Recycling of Hazardous Waste
9. SOP for Disease Vector and Pests Management
10. SOP for Cleaning of Infectious Trolley Line
11. SOP for Handling of Soiled Linens in Hospital Ward
12. SOP for Implementing the Hospital Infection Outbreak Control System
13. SOP for Disposal of Solid Medical Waste
14. SOP for Management of Blood and Blood Components
15. SOP for Transportation of LB3 from Hospital Room to the LB3 Temporary Storage
16. SOP for Handling of LB3 Spills or Leaks
17. SOP for Transporting Dirty Linen from Rooms to the Laundry Room
18. SOP for Delivery of Clean Linen from the Laundry Unit to the Rooms
19. SOP for Cleaning of Non-Critical DDT Medical Devices
20. SOP for Cleaning the Patient Care Environment and Non-Critical Equipment at DTT
21. SOP for Washing Curtains or Drapes

22. SOP for Chemical Spill Handling
23. SOP for Air Quality Monitoring Policy
24. SOP for Wastewater Treatment Using the SBR System
25. SOP for Power Outage at the Water Management Unit
26. SOP for Lifting Weights Under 25 kg
27. SOP for Lifting Weights Over 25 kg
28. SOP for Airborne Microbial Sampling
29. SOP for Monitoring of Food and Beverage Safety
30. SOP for Cleaning Up Blood and Body Fluid Spills Using a Spill Kit
31. SOP for Chlorine Solution Production
32. SOP for Food Sampling (Sample Bank)
33. SOP for Compulsory Reporting Receiving Institution/*Institusi Penerima Wajib Laporkan* (IPWL) Program
34. SOP for Patient Transfer from Psychiatric Intensive Care Unit/ *Unit Pelayanan Intensif Psikiatri* (UPIP) to Inpatient Room (Quiet Ward)
35. SOP for Occupational Workers Accident in Hospital Area
36. SOP for Occupational Workers Accident Outside Hospital Area (Traffic Accidents)

Procedure for transferring psychiatric hospital is aligned with the national and international regulations, namely UN Convention on the Rights of Persons with Disabilities (UNCRPD), WHO Quality Rights initiative, and UNHCR transport standards alongside Good International Industry Practice (GIIP). The procedure highlights the use of the Situation, Background, Assessment, Recommendation (SBAR) framework.

Moreover, regarding handling of patients with drug addiction, Marzoeki Mahdi Hospital is considered as one of the psychiatric institution capable of handling Compulsory Reporting Receiving Institution/*Institusi Penerima Wajib Laporkan* (IPWL) Program, which procedure is stated in SOP regarding this program. The SOP aligned with Indonesian Law No. 17 Year 2023 on Health and Government of Indonesia Regulation No. 28 Year 2024 on Implementation Regulation on Law No. 17 Year 2023 on Health.

To ensure strict adherence to established Standard Operating Procedures (SOPs) and minimize occupational health and safety risks, the hospital enforces a robust Occupational Health and Safety Management System (OHSMS / K3RS). Operational compliance and incident prevention are driven by the following key institutional controls:

- Personal Protective Equipment (PPE) Monitoring: Routine compliance tracking via dedicated PPE monitoring forms to ensure healthcare personnel, support staff, and contractors consistently utilize appropriate protective gear based on job-specific risk profiles and exposure levels.
- Regular OHS Awareness & Training: Annual safety socialization programs conducted for all hospital workers, administrative personnel, and third-party tenants to maintain high operational awareness of hazard controls and emergency procedures.
- Systematic Incident & Accident Reporting: Implementation of standardized reporting protocols and documentation tools to record, investigate, and analyze any work-related injury or incident that happened to hospital workers, which may occur both within and outside hospital premises.

Additionally, to ensure immediate response and standardized mitigation, Dr. H. Marzoeki Mahdi Hospital maintains a specific SOP for Occupational Accident Handling (SOP Penanganan Kecelakaan Kerja), for both accidents which happened inside the hospital or outside the hospital premise. This procedure establishes clear protocols for emergency medical response, root-cause analysis, corrective action tracking, and formal escalation to ensure all incidents are addressed in accordance with regulatory standards and national health and safety frameworks.

### 3.4 Associated Facilities

The Project will be implemented within the existing RS Marzoeki Mahdi (RSMM) hospital complex and will require the demolition, relocation, or functional reorganization of several existing buildings to accommodate the proposed Phase 1 and Phase 2 developments. These existing facilities are considered associated facilities for the purpose of the ESIA because they are functionally linked to hospital operations and may be directly affected by the Project, although they are not financed under the proposed AIB-supported development.

Based on masterplan, the proposed development footprint overlaps with a number of existing healthcare, administrative, residential, educational, and support facilities. The Project has been designed to retain selected buildings of operational and historical importance, including Gedung Rama (NAPZA Ward), Gedung Candradimuka, and the Dental Clinic (Poli Gigi). Other existing buildings located within the development footprint may require demolition, relocation, or functional consolidation prior to construction. The preliminary list of associated facilities potentially affected by the Project is presented in the table below.

**3.27. Associated facilities potentially affected by the Project**

| No | Activity                                                                                                                                                                                                         | Financial Source        | Directly and Materially Related to Project                                                                                                                | Carried Out Contemporaneously                                                                                          | Necessary for Project Viability                                                        | Conclusion          |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------|
| 1  | Demolition of existing buildings (Rawat Inap Abimanyu, Rawat Inap Pemping, Gizi, Pol Kendaraan) to facilitate the construction of a one-storey Gedung Utilitas with a total floor area of 5,560 m <sup>2</sup> . | Government of Indonesia | Yes — The demolition of the existing buildings is directly and materially related to the construction of the new AIIB-financed building on the same site. | Yes — Demolition of the existing buildings and relocation of services will be carried out during Phase 1 construction. | Yes — Demolition is required to enable construction of the new AIIB-financed building. | Associated Facility |
| 2  | Demolition of existing buildings (Rawat Inap Jiwa Utari) to facilitate the construction of a four-storey Gedung NAPZA with a total floor area of 3,750 m <sup>2</sup> .                                          | Government of Indonesia | Yes — The demolition of the existing buildings is directly and materially related to the construction of the new AIIB-financed building on the same site. | Yes — Demolition of the existing buildings and relocation of services will be carried out during Phase 1 construction. | Yes — Demolition is required to enable construction of the new AIIB-financed building. | Associated Facility |
| 3  | Demolition of existing buildings (Rawat Inap Jiwa Subadra) to facilitate the construction of the Gedung Rawat Inap Psikiatri with a total floor area of 13,600 m <sup>2</sup> .                                  | Government of Indonesia | Yes — The demolition of the existing buildings is directly and materially related to the construction of the new AIIB-financed building on the same site. | Yes — Demolition of the existing buildings and relocation of services will be carried out during Phase 1 construction. | Yes — Demolition is required to enable construction of the new AIIB-financed building. | Associated Facility |
| 4  | Demolition of existing buildings (Gedung Rehabilitasi Sosial, Rawat Inap Yudistira) to facilitate the construction of a two-storey Gedung Ballroom with a total floor area of 4,800 m <sup>2</sup> .             | Government of Indonesia | Yes — The demolition of the existing buildings is directly and materially related to the construction of the new AIIB-financed building on the same site. | Yes — Demolition of the existing buildings and relocation of services will be carried out during Phase 1 construction. | Yes — Demolition is required to enable construction of the new AIIB-financed building. | Associated Facility |
| 5  | Demolition of existing buildings (Rawat Inap Jiwa Sadewa, Rawat Inap Jiwa Shinta) to facilitate the construction of a two-storey Gedung Manajemen                                                                | Government of Indonesia | Yes — The demolition of the existing buildings is directly and materially related to the construction of the new                                          | Yes — Demolition of the existing buildings and relocation of services will be carried out during Phase 1 construction. | Yes — Demolition is required to enable construction of the new AIIB-financed building. | Associated Facility |

| No | Activity                                                                                                                                                                                                               | Financial Source        | Directly and Materially Related to Project                                                                                                                | Carried Out Contemporaneously                                                                                          | Necessary for Project Viability                                                        | Conclusion          |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------|
|    | with a total floor area of 4,000 m <sup>2</sup> .                                                                                                                                                                      |                         | AIIB-financed building on the same site.                                                                                                                  |                                                                                                                        |                                                                                        |                     |
| 6  | Demolition of existing buildings (Rawat Inap Jiwa Sadewa, Rawat Inap Jiwa Shinta) to facilitate the construction of an eight-storey Gedung Teaching Hospital with a total floor area of 41,152 m <sup>2</sup> .        | Government of Indonesia | Yes — The demolition of the existing buildings is directly and materially related to the construction of the new AIIB-financed building on the same site. | Yes — Demolition of the existing buildings and relocation of services will be carried out during Phase 1 construction. | Yes — Demolition is required to enable construction of the new AIIB-financed building. | Associated Facility |
| 7  | Demolition of existing buildings (Poli Spesialis Umum, IGD, Perina, Rekam Medis) to facilitate the construction of an eight-storey Gedung Layanan Umum with a total floor area of 56,800 m <sup>2</sup> .              | Government of Indonesia | Yes — The demolition of the existing buildings is directly and materially related to the construction of the new AIIB-financed building on the same site. | Yes — Demolition of the existing buildings and relocation of services will be carried out during Phase 2 construction. | Yes — Demolition is required to enable construction of the new AIIB-financed building. | Associated Facility |
| 8  | Demolition of existing buildings (Poli Spesialis Umum, IGD, Perina, Rekam Medis) to facilitate the construction of a one-storey Gedung IGD Non Psikiatri with a total floor area of 800 m <sup>2</sup> .               | Government of Indonesia | Yes — The demolition of the existing buildings is directly and materially related to the construction of the new AIIB-financed building on the same site. | Yes — Demolition of the existing buildings and relocation of services will be carried out during Phase 2 construction. | Yes — Demolition is required to enable construction of the new AIIB-financed building. | Associated Facility |
| 9  | Demolition of existing buildings (Poli Spesialis Umum, IGD, Perina, Rekam Medis) to facilitate the construction of a two-storey Gedung IGD Psikiatri & Polipsikiatri with a total floor area of 1,860 m <sup>2</sup> . | Government of Indonesia | Yes — The demolition of the existing buildings is directly and materially related to the construction of the new AIIB-financed building on the same site. | Yes — Demolition of the existing buildings and relocation of services will be carried out during Phase 2 construction. | Yes — Demolition is required to enable construction of the new AIIB-financed building. | Associated Facility |
| 10 | Demolition of existing buildings (Poli Spesialis Umum, IGD, Perina, Rekam Medis) to facilitate the construction of a                                                                                                   | Government of Indonesia | Yes — The demolition of the existing buildings is directly and materially related to the                                                                  | Yes — Demolition of the existing buildings and relocation of services will be                                          | Yes — Demolition is required to enable construction of the new AIIB-financed building. | Associated Facility |

| No | Activity                                                                                                                                                                                                                                                                                                                    | Financial Source        | Directly and Materially Related to Project                                                                                                                | Carried Out Contemporaneously                                                                                          | Necessary for Project Viability                                                        | Conclusion          |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------|
|    | four-storey Gedung Rawat Inap Psikiatri Eksekutif with a total floor area of 8,000 m <sup>2</sup> .                                                                                                                                                                                                                         |                         | construction of the new AIIB-financed building on the same site.                                                                                          | carried out during Phase 2 construction.                                                                               |                                                                                        |                     |
| 11 | Demolition of existing buildings (Gedung Pertemuan Ex Kresna, Kantin & Toko Koperasi) to facilitate the construction of a one-storey Gedung Upip Wanita dan Laki-laki with a total floor area of 950 m <sup>2</sup> .                                                                                                       | Government of Indonesia | Yes — The demolition of the existing buildings is directly and materially related to the construction of the new AIIB-financed building on the same site. | Yes — Demolition of the existing buildings and relocation of services will be carried out during Phase 2 construction. | Yes — Demolition is required to enable construction of the new AIIB-financed building. | Associated Facility |
| 12 | Demolition of existing buildings (Gedung Pertemuan Ex Kresna, Kantin & Toko Koperasi) to facilitate the construction of a one-storey Ruang Tenang with a total floor area of 1,775 m <sup>2</sup> .                                                                                                                         | Government of Indonesia | Yes — The demolition of the existing buildings is directly and materially related to the construction of the new AIIB-financed building on the same site. | Yes — Demolition of the existing buildings and relocation of services will be carried out during Phase 2 construction. | Yes — Demolition is required to enable construction of the new AIIB-financed building. | Associated Facility |
| 13 | Demolition of existing buildings (Rawat Inap Jiwa Bratasena dan Rawat Inap Jiwa Saraswati) to facilitate the construction of a four-storey Gedung Rawat Inap Psikiatri JKN (Area C+D) with a total floor area of 13,600 m <sup>2</sup> and a two-storey Gedung PKJN/CMH 2 with a total floor area of 1,270 m <sup>2</sup> . | Government of Indonesia | Yes — The demolition of the existing buildings is directly and materially related to the construction of the new AIIB-financed building on the same site. | Yes — Demolition of the existing buildings and relocation of services will be carried out during Phase 2 construction. | Yes — Demolition is required to enable construction of the new AIIB-financed building. | Associated Facility |
| 14 | Demolition of existing buildings (Rawat Inap Jiwa Drupadi) to facilitate the construction of a one-storey Gedung Sport Psikiatri 1 with a total floor area of 7,300 m <sup>2</sup> .                                                                                                                                        | Government of Indonesia | Yes — The demolition of the existing buildings is directly and materially related to the construction of the new AIIB-financed building on the same site. | Yes — Demolition of the existing buildings and relocation of services will be carried out during Phase 2 construction. | Yes — Demolition is required to enable construction of the new AIIB-financed building. | Associated Facility |

| No | Activity                                                                                                                                                                           | Financial Source        | Directly and Materially Related to Project                                                                                                                                                              | Carried Out Contemporaneously                                                                                                           | Necessary for Project Viability                                                                                                               | Conclusion                 |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| 15 | Demolition of existing buildings (Gedung Murai, Gedung Kesling) to facilitate the construction of a two-storey Gedung Rumah Duka with a total floor area of 1,800 m <sup>2</sup> . | Government of Indonesia | Yes — The demolition of the existing buildings is directly and materially related to the construction of the new AIIB-financed building on the same site.                                               | Yes — Demolition of the existing buildings and relocation of services will be carried out during Phase 2 construction.                  | Yes — Demolition is required to enable construction of the new AIIB-financed building.                                                        | Associated Facility        |
| 16 | Existing road Jl. Dr. Sumeru                                                                                                                                                       | Central Government      | The road directly connects RSMM to the national road network.                                                                                                                                           | The roads are existing operational infrastructure; any maintenance or minor upgrading would proceed regardless of the hospital project. | The roads serve not only RSMM Hospital but also Braja Mustika Hotel, RSUD Kota Bogor, Graha Waskita, and surrounding residential communities. | Not an Associated Facility |
| 17 | PLN electricity supply upgrade and connection works.                                                                                                                               | PT PLN (state utility)  | The PLN electricity supply serving RS Marzoeqi Mahdi is part of the existing public electricity distribution network and is not constructed exclusively or essentially because of the hospital project. | Any PLN network upgrades in the area serve multiple consumers and would proceed under PLN's own network development programme.          | The viability of the hospital project does not depend on a specific PLN infrastructure investment; standard grid connection procedures apply. | Not an Associated Facility |

### 3.5 Land Requirement & Status

The development plan for Dr. H. Marzoeqi Mahdi Hospital will be carried out on the existing developed site, so no land acquisition is required. The development will involve the demolition of existing buildings, followed by the construction of new buildings in accordance with the master plan.

Regarding land status, the land of Dr. H. Marzoeqi Mahdi, the hospital already obtained Certificate of Land Use (*Sertifikat Hak Pakai*/SHP) No. 142 year 2016 with land area of 387,419 m<sup>2</sup>. This certificate confirms RSMM's legal landholding and establishes the cadastral boundary of the hospital complex.

The hospital also already obtained Approval for Spatial Utilization Activity Suitability (PKKPR) No. 26092210313271154, issued on behalf of the Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency by the Head of the Indonesia Investment Coordinating Board. This approval confirms that the planned RSMM development is in accordance with the spatial law.

### 3.6 Project Implementation Schedule

The Dr. H. Marzoeqi Mahdi Psychiatric Hospital Development Project is scheduled to be finished in five years, beginning in 2026 and ending in 2030. Construction activity is scheduled to start in mid 2027 to mid 2029 for Phase 1 construction, and mid 2029 to mid 2030 for Phase 2 construction. The complete timeline for the project is shown in the following figure:

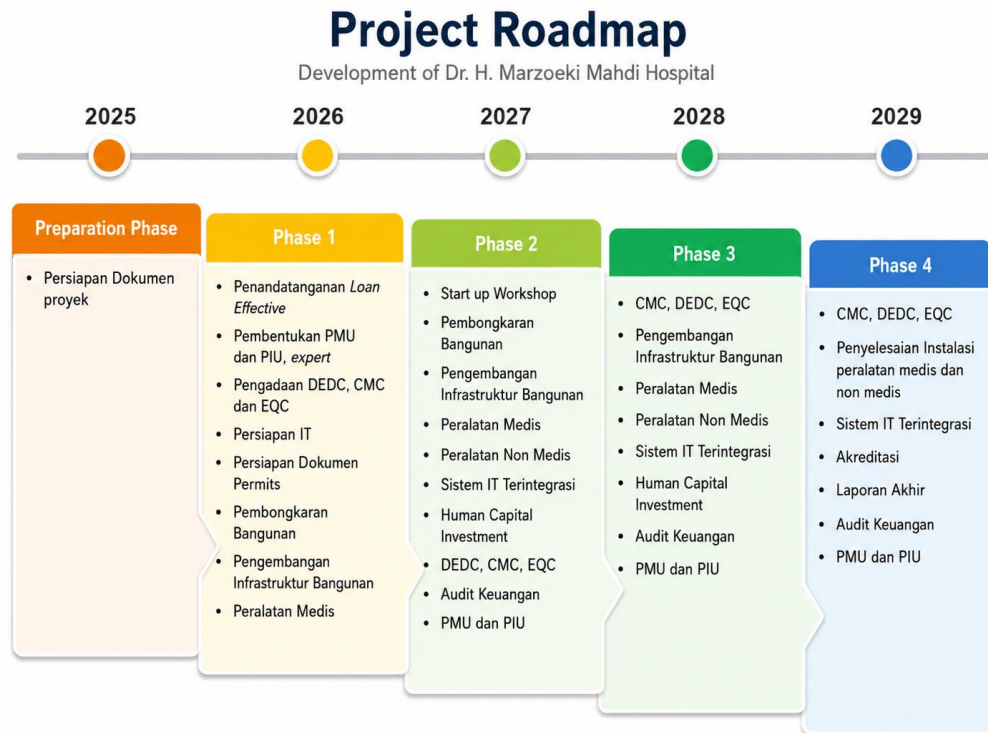


Figure 3.12. Project Roadmap

## **4 ANALYSIS OF ALTERNATIVES**

### **4.1 Project Site Alternatives**

The Project site alternatives assessment considered the suitability of developing the proposed facilities within the existing RS Marzoeqi Mahdi hospital complex compared to alternative off-site locations. The selected site is located within the existing hospital area in Bogor, West Java, covering approximately 57 hectares of institutional land already owned and operated by RSMM.

The use of the existing hospital area offers several advantages, including:

- availability of existing healthcare infrastructure and utility connections;
- integration with existing hospital operations and services;
- accessibility through established road networks and public transportation;
- minimization of land acquisition requirements and social displacement risks;
- compatibility with the approved hospital masterplan and zoning arrangements.

Alternative off-site locations would likely require additional land acquisition, potential resettlement, new infrastructure development, and longer implementation timelines, which could increase environmental and social risks as well as project costs. Therefore, the selected project site within the existing RSMM area is considered the most feasible and environmentally preferable option.

### **4.2 Project Schedule Alternatives**

Several project schedule alternatives were considered to ensure effective construction management while maintaining uninterrupted hospital operations. The selected implementation schedule adopts a phased development approach from 2026 to 2030, allowing construction activities, medical equipment installation, IT system integration, and commissioning processes to be carried out gradually and systematically. This approach minimizes disruption to ongoing healthcare services, reduces operational and safety risks within the active hospital environment, and provides sufficient flexibility for procurement, workforce mobilization, and coordination with the planned commencement of medical education programs. Accelerated construction schedules were considered less favorable due to the higher potential for operational disruption, increased safety risks, and logistical constraints, while delayed implementation could postpone the improvement of healthcare services and educational capacity. Therefore, the phased schedule was selected as the most feasible and manageable alternative for the Project.

### 4.3 Project Design Alternatives

Project design alternatives were evaluated to ensure that the proposed hospital development supports efficient healthcare operations, patient safety, environmental sustainability, and long-term institutional needs. The selected design follows the approved RSMM masterplan and incorporates separate zoning between psychiatric and non-psychiatric services to improve patient flow, operational effectiveness, safety, and comfort. The design also integrates modern healthcare facilities, teaching hospital functions, digital healthcare systems, supporting utilities, and healthcare waste management infrastructure in accordance with applicable healthcare standards and good international industry practices. Additional considerations included accessibility, emergency response capability, infection prevention and control, energy efficiency, flexibility for future expansion, and integration with existing hospital operations. Alternative layouts with less efficient circulation systems or limited integration of healthcare and educational functions were considered less suitable for supporting RSMM's long-term vision as a national referral and teaching hospital.

### 4.4 Without Project Alternative

The “Without Project” alternative considers the scenario in which the proposed development of RS Marzoeqi Mahdi is not implemented. Under this scenario, the hospital would continue operating with its existing facilities and infrastructure, many of which are aging and no longer fully meet the standards of a modern referral and teaching hospital. Existing limitations in emergency services, inpatient capacity, ICU facilities, laboratory and radiology services, psychiatric treatment facilities, and supporting infrastructure would remain unresolved.

Without the Project, RSMM may face difficulties in accommodating increasing healthcare demand, supporting specialist medical education, and improving the quality of mental health and general healthcare services. The hospital would also have limited capability to support the government's healthcare transformation agenda and the establishment of RSMM as a Main Teaching Hospital (RSPPU). In addition, the opportunity to strengthen Indonesia's mental health referral system, improve healthcare accessibility, and reduce dependency on overseas medical treatment would be constrained.

Therefore, the “Without Project” alternative is considered less favorable because it would not adequately address the increasing demand for modern healthcare services, medical education facilities, and healthcare infrastructure improvements.

## 5 ENVIRONMENTAL, BIODIVERSITY, AND SOCIAL BASELINE CONDITION

### 5.1 Environmental Baseline

In this chapter, environmental conditions are described to establish a benchmark against which environmental risk and impact assessment and monitoring is carried out during project construction and operation. The information presented in this chapter used both primary data and secondary data that is collected and collated from existing sources that are relevant to the project, and reliable for the purpose of environmental baseline establishment.

#### 5.1.1 Climate

The project site of the proposed redevelopment of Rumah Sakit dr. H. Marzoeqi Mahdi is located within the Bogor region of West Java Province, Indonesia, which is characterized by a humid tropical climate with high annual rainfall, elevated humidity levels, and relatively stable temperatures throughout the year. Climatic conditions in the area are strongly influenced by the Asian–Australian monsoon system, regional mountainous topography surrounding Bogor, and broader climate variability phenomena such as the El Niño Southern Oscillation (ENSO). The wet season generally occurs between November and April, with peak rainfall typically observed during January and February, while the dry season is comparatively shorter in duration. Average monthly rainfall during the wet season may range between approximately 250–500 mm/month, accompanied by relatively high rainfall frequency of approximately 20–28 rainy days per month. Ambient air temperatures in the project area generally range from approximately 23°C to 32°C, while relative humidity commonly exceeds 75%.

**Table 5.1. Climate Condition**

| Climate Parameter                  | Climatic Condition             |
|------------------------------------|--------------------------------|
| Climate Type                       | Humid tropical climate         |
| Wet Season                         | November – April               |
| Peak Wet Season                    | January – February             |
| Monthly Rainfall During Wet Season | Approximately 250–500 mm/month |
| Rainy Days                         | Approximately 20–28 days/month |
| Ambient Temperature                | Approximately 23–32°C          |
| Relative Humidity                  | Approximately >75%             |

#### a. Rainfall

Based on data from the BMKG Station of Atang Sendjaja Air Force Base (2025) rainfall throughout 2016 - 2025 reached its highest point in May 2025 (252.2 mm) and its lowest point in December 2016 (19.9 mm). The following monthly rainfall data based on data from the

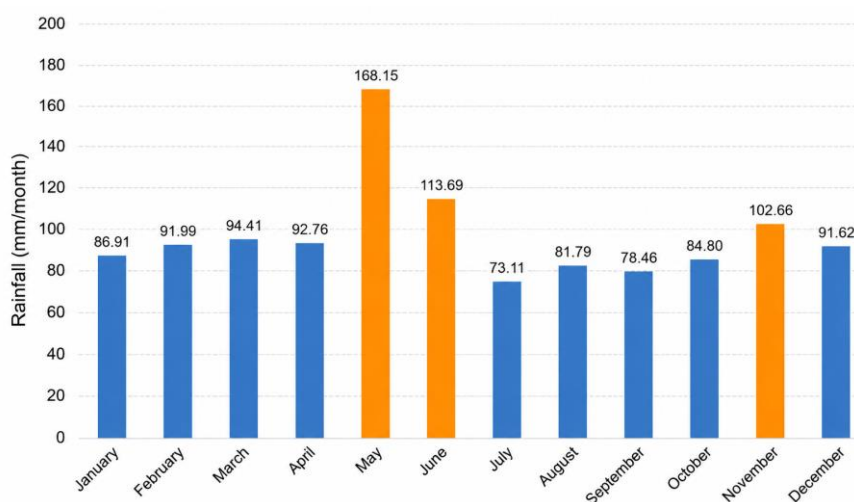
BMKG Station of Atang Sendjaja Air Force Base for 2016 - 2025 can be seen in the following table:

**Table 5.2. Rainfall Data**

| Bulan     | 2016  | 2017  | 2018  | 2019   | 2020   | 2021   | 2022   | 2023   | 2024   | 2025   | Rata-rata |
|-----------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|-----------|
| Januari   | 103,8 | 28,6  | 29,8  | 175,1  | 78,1   | 91,5   | 67,2   | 107    | 25,9   | 162,1  | 86,91     |
| Februari  | 105,7 | 75    | 62,7  | 38,1   | 96,6   | 95,8   | 117,3  | 86,7   | 118,8  | 123,2  | 91,99     |
| Maret     | 73,3  | 44,2  | 25    | 45,8   | 128,1  | 139,7  | 84,7   | 142,6  | 142,5  | 118,2  | 94,41     |
| April     | 108,6 | 50,3  | 49,1  | 98,1   | 78,8   | 110,6  | 107,8  | 107,1  | 104,6  | 112,6  | 92,76     |
| Mei       | 67,2  | 48,1  | 134,5 | 150,6  | 184,2  | 217,9  | 187,5  | 220,2  | 218,8  | 252,5  | 168,15    |
| Juni      | 81,7  | 117,6 | 91,3  | 106,5  | 111,3  | 116,1  | 120,9  | 125,7  | 130,5  | 135,3  | 113,69    |
| Juli      | 63,3  | 77,3  | 20,5  | 80,9   | 68,2   | 55,4   | 49,1   | 95,2   | 106,4  | 114,8  | 73,11     |
| Agustus   | 66,7  | 70    | 41,6  | 66,7   | 72,6   | 92,1   | 74,9   | 97,9   | 129,7  | 105,7  | 81,79     |
| September | 96,3  | 63    | 67    | 46,1   | 31,5   | 61,8   | 72,2   | 135,8  | 75,2   | 135,7  | 78,46     |
| Oktober   | 73,3  | 76,9  | 76,8  | 79,2   | 80,9   | 82,7   | 84,4   | 86,2   | 87,9   | 119,7  | 84,8      |
| November  | 50,2  | 41,4  | 76,8  | 82,7   | 96     | 109,3  | 122,6  | 135,9  | 149,2  | 162,5  | 102,66    |
| Desember  | 19,9  | 33,2  | 52,2  | 67,4   | 83,5   | 99,7   | 115,8  | 132    | 148,2  | 164,3  | 91,62     |
| Jumlah    | 910,0 | 725,6 | 727,3 | 1037,2 | 1109,8 | 1272,6 | 1204,4 | 1472,3 | 1437,7 | 1706,6 |           |

Source: Processed from Lanud Atang Sendjaja Station's Data, 2025

The average monthly rainfall is presented in figure below. Medium rainfall (100 – 300mm/month) occurs in May, June and November, while low rainfall (<100 mm/month) occurs in January, February, March, April, July, August, September, October, and December.



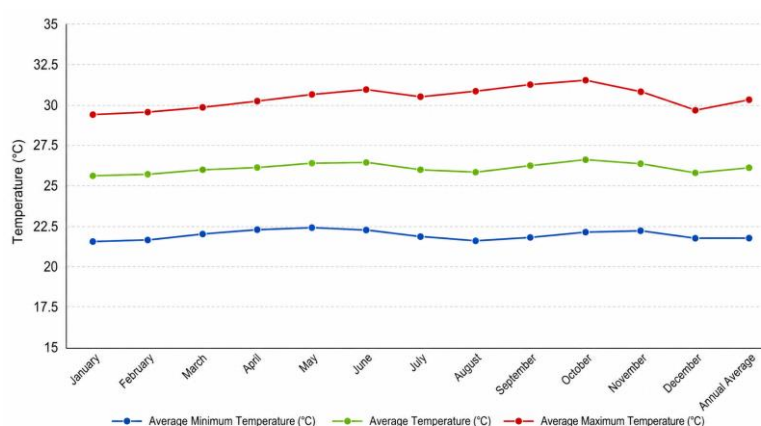
**Figure 5.1 Average Monthly Rainfall**

#### b. Temperature

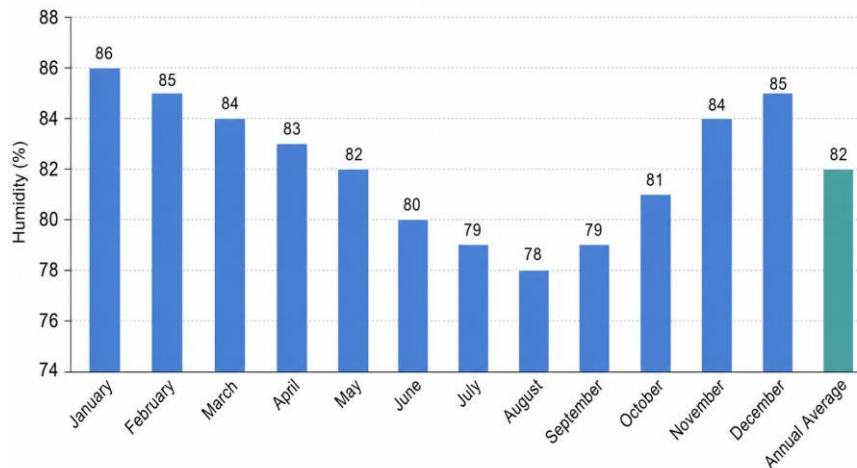
The lowest monthly minimum temperature is found in July and August with a value of 23.8 °C; while the highest monthly maximum temperature is found in October with a value of 33.6 °C. Temperature variations ranged from 6.4 - 9.1 °C. The largest temperature variation was found in September with a minimum temperature of 24.1 °C and a maximum of 33.3 °C.

**Table 5.3. Monthly Temperature Variations (°C)**

| Month          | Temperature (°C) |         |         |
|----------------|------------------|---------|---------|
|                | Minimum          | Maximum | Average |
| January        | 22.1             | 29.4    | 25.8    |
| February       | 22.0             | 29.6    | 25.9    |
| March          | 22.1             | 30.1    | 26.1    |
| April          | 22.3             | 30.5    | 26.4    |
| May            | 22.4             | 31.0    | 26.7    |
| June           | 22.1             | 30.8    | 26.5    |
| July           | 21.8             | 30.6    | 26.2    |
| August         | 21.7             | 31.0    | 26.4    |
| September      | 22.0             | 31.5    | 26.8    |
| October        | 22.3             | 31.6    | 27.0    |
| November       | 22.4             | 30.7    | 26.5    |
| December       | 22.2             | 29.8    | 26.0    |
| Annual Average | 22.1             | 30.6    | 26.4    |

**Figure 5.2 Graph of Monthly Temperature Variations (°C)****c. Humidity**

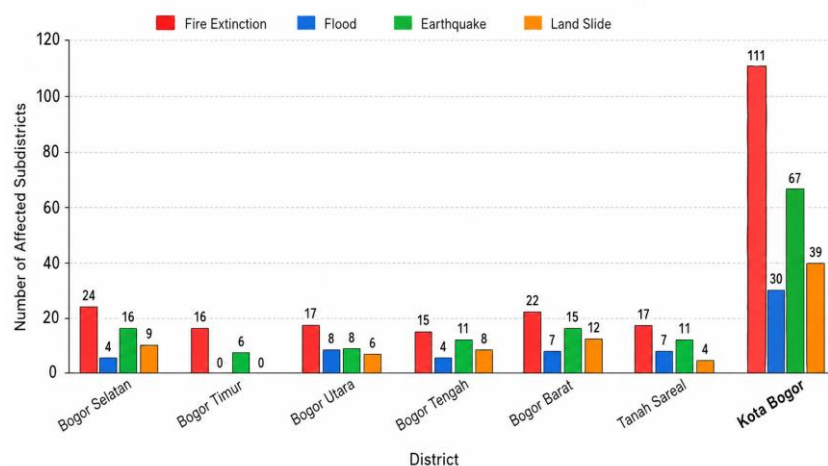
Humidity ranges from a minimum of 78% in August to a maximum of 86% in January with an average of 82%.



**Figure 5.3 Monthly Average Humidity**

#### d. Disaster risk

Given that project is located in Bogor Municipality, the local disaster profile is relevant to understanding the environmental and social context of the hospital area. In 2025, Bogor Municipality recorded various natural disaster occurrences across its districts, with fire incidents being the most dominant, followed by earthquakes, landslides, and floods. This indicates that the hospital operates within an urban area that may be exposed to multiple hazard risks, particularly fire, seismic events, landslides, and localized flooding.



Source: BPS-Statistics Indonesia, Village Potential Data Collecting 2024

**Figure 5.4 Number of Subdistricts that Had Natural Disaster, 2025**

#### e. Wind Direction and Speed

The monthly average wind speed ranges from 0.01-8.73 m/s with an average of 2.0 m/s. Dominant winds come from the East-Northeast and West-Southwest with dominant speeds of 0.71 m/s.

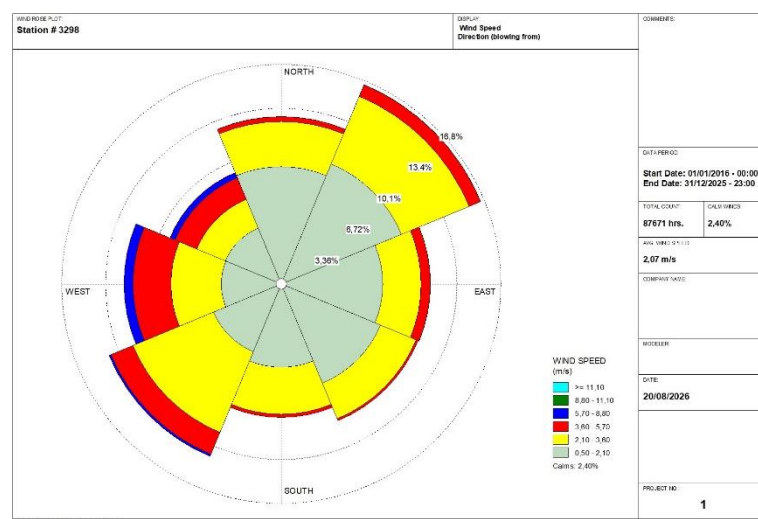


Figure 5.5. Wind Direction and Speed

### 5.1.2 Chemical-Physical

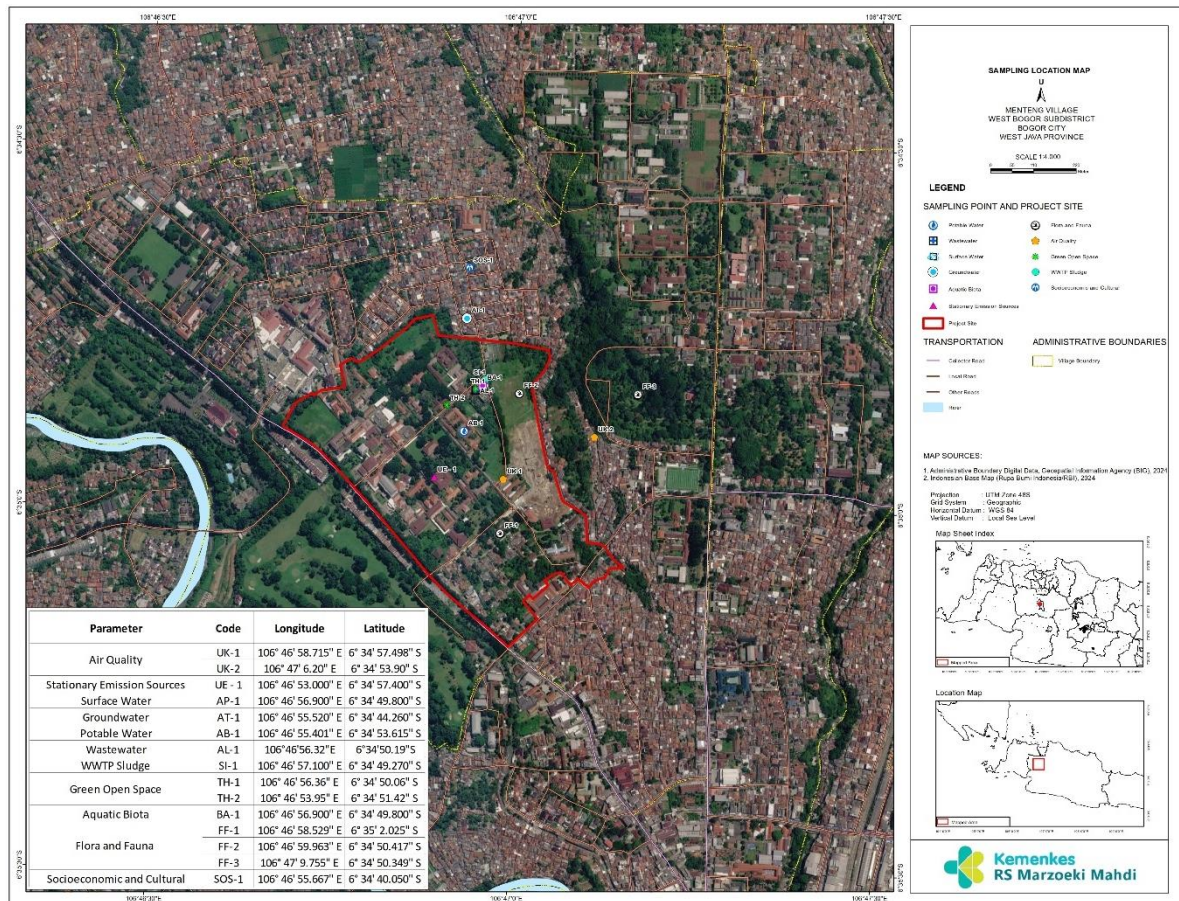
#### a. Air Quality

Ambient air quality samples were collected at 2 sampling sites representing the entire dr. H. Marzoeqi Mahdi Hospital project area. Noise and vibration levels were also measured at these sites considered representative of the Project area and existing settlement area. These sampling and measurements including laboratory analysis were undertaken by accredited party in May 2026 to update the baseline data obtained in 2019. Information related to the sampling sites are presented in the following table.

Table 5.4. Air Quality Sampling, Noise and Vibration Measurement Sites

| Sampling Site Code              | Existing Land Use          | Coordinates     |                   |
|---------------------------------|----------------------------|-----------------|-------------------|
|                                 |                            | South           | East              |
| UKG-1: Project Area             | Green Open Space           | 6° 34' 57.49" S | 106° 46' 58.71" E |
| UKG-2: Existing Settlement Area | Community settlement areas | 6° 34' 53.90" S | 106° 47' 6.20" E  |

The locations of the sampling/measurement sites in relation to dr. H. Marzoeqi Mahdi Hospital are shown in the following map.



**Figure 5.6 Air Quality Noise and Vibration Sampling Measurement Sites**

The ambient air samples were collected by the technicians of the accredited laboratory on 19 May 2026 following the method described in the Indonesian Standard SNI 19-7119.6-20050 using high-volume gas sampler for 24-hours as shown in the following figure. The air samples are then analyzed for parameters listed in the Government Regulation No. 22/2021 on Environmental Protection and Management, Appendix VII: Ambient Air Quality Standards.



**Figure 5.7 Ambient Air Quality Data Collection**

The sampling and laboratory analysis were performed following Indonesian National Standards to ensure reliable and accurate results. The measurement outcome is listed in the table below.

**Table 5.5. Air Quality**

| Parameters                                  | GR No. 22/2021 Threshold Value (Measurement Period) | UKG-1: Project Area | UKG-2: Settlement Area |
|---------------------------------------------|-----------------------------------------------------|---------------------|------------------------|
| Sulfur dioxide (SO <sub>2</sub> )           | 150 µg/Nm <sup>3</sup> /24-hour                     | <8,7                | <8,7                   |
| Carbon monoxide (CO)                        | 10,000 µg/Nm <sup>3</sup> /1-hour                   | 1.259,7             | 1.145,2                |
| Nitrogen dioxide (NO <sub>2</sub> )         | 200/24-hour                                         | <9,5                | <9,5                   |
| Oxidant (O <sub>3</sub> )                   | 150/1-hour                                          | <2,6                | <2,6                   |
| Non-methane hydrocarbon                     | 160/3-hours                                         | -                   | -                      |
| Total suspended particulates (TSP) ≤ 100 µm | 230/24-hours                                        | 85                  | 64                     |
| Particulates ≤10 µm (PM <sub>10</sub> )     | 75/24-hours                                         | 27                  | 21                     |
| Particulates ≤2.5 µm (PM <sub>2.5</sub> )   | 55/24-hours                                         | 20                  | 15                     |
| Lead (Pb)                                   | 2/24-hours                                          | -                   | -                      |

Source: Laboratory analytical results (PT BMT Asia, May 2026)

**b. Noise and Vibration Level**

Noise Level within dr. H. Marzoeeki Mahdi Hospital project area. The measurement of ambient noise level representing the development area was conducted at Menteng Sub-District UKG-1 and UKG-2 which were the same sites as those of the ambient air quality sampling (see figure below). The noise measurement was conducted for 24-hours using the sound level meter based on the methodology defined in the Indonesian Minister of Environment (MoE) Decree No. 48/1996 concerning Noise Level Standards.

Noise Level within dr. H. Marzoeeki Mahdi Hospital project area. The measurement of ambient noise level representing the development area was conducted at Menteng Sub-District UKG-1 and UKG-2 which were the same sites as those of the ambient air quality sampling (see figure below). The noise measurement was conducted for 24-hours using the sound level meter based on the methodology defined in the Indonesian Minister of Environment (MoE) Decree No. 48/1996 concerning Noise Level Standards.

**Figure 5.8 Noise Level Measurement**

**Table 5.6. Noise Level**

| Parameters                                            | (UKG-1)<br>Project Area | (UKG-2)<br>Settlement Area | Indonesian MoE No. 48/1996 Standard                                         |
|-------------------------------------------------------|-------------------------|----------------------------|-----------------------------------------------------------------------------|
| Calculated day- and night-time noise level equivalent | 63,6                    | 57,7                       | 55 (for residential area)<br>60 (for public area)<br>70 (for industri area) |

Source: Laboratory analytical results (PT BMT Asia, May 2026)

The noise level at Menteng Sub-district was measured at 57.7 dB(A) which is above the threshold value of 55 dB(A) for residential areas, but still under the noise level limit (55+3 dBA as stated in Ministry of Environment and Forestry Regulation No. 48/1996). The noise level at project area was measured at 63,6 dB(A) which is above the threshold value of 55 dB(A) for hospital area, as stipulated by the MoE Decree No. 48/1996. The baseline noise levels at hospital area already exceeded these guidelines. The main source of noise at this site was dominated by current ongoing construction activity of the Genebank.

#### c. Surface Water Quality

Surface water samples were collected from 1 (one) sampling sites considered representative of the watersheds that overlap with the dr. H. Marzoeqi Mahdi Hospital project area. The water samples were analyzed by an accredited laboratory and the results interpreted against the Government Regulation No. 22/2021, Attachment VI: National Surface Water Quality Standards – Class 3: Water quality which is intended for aquaculture, farming, irrigation or similar use to appreciate the baseline condition, of surface water quality at the sampling points.

The analytical result of the water samples collected at a point within River near project area is presented in the following table. The river water quality at the one sampling points was considered relatively good quality despite their turbid appearance. None of the water quality parameters was measured above the threshold values stipulated by the GoI standards on surface water quality as described in the following.



**Figure 5.9 Surface Water Sampling**

**Table 5.7. Surface Water Analytical Result**

| Parameters                         | Unit       | Threshold value | Sampling site (AP1) |
|------------------------------------|------------|-----------------|---------------------|
| Temperature                        | °C         | Deviation 3     | 29,4                |
| Total dissolved solids (TDS)       | mg/L       | 1,000           | 80                  |
| Total suspended solids (TSS)       | mg/L       | 100             | <1                  |
| Color                              | Pt-Co      | 100             | 3                   |
| pH                                 | -          | 6 – 9           | 7,1                 |
| Biological oxygen demand (BOD)     | mg/L       | 6               | 2                   |
| Chemical oxygen demand (COD)       | mg/L       | 40              | 11                  |
| Dissolved oxygen (DO)              | mg/L       | 3               | 5,2                 |
| Turbidity                          | NTU        | -               | 1,34                |
| Sulfate ( $\text{SO}_4^{2-}$ )     | mg/L       | 300             | 26                  |
| Chloride ( $\text{Cl}^-$ )         | mg/L       | 300             | 17                  |
| Nitrate (as N)                     | mg/L       | 20              | 1,62                |
| Nitrite (as N)                     | mg/L       | 0.06            | 0,03                |
| Ammonia ( $\text{NH}_3\text{-N}$ ) | mg/L       | 0.5             | 0,1                 |
| Total phosphate (as P)             | mg/L       | 1.0             | 0,41                |
| Fluoride ( $\text{F}^-$ )          | mg/L       | 1.5             | <0,06               |
| Cyanide ( $\text{CN}^-$ )          | mg/L       | 0.02            | 0,004               |
| Free Chlorine ( $\text{Cl}_2$ )    | mg/L       | 0.03            | <0,02               |
| Dissolved Mercury (Hg)             | mg/L       | 0.002           | <0,0002             |
| Dissolved Arsenic (As)             | mg/L       | 0.05            | <0,002              |
| Dissolved iron (Fe)                | mg/L       | -               | <0,03               |
| Dissolved Cadmium (Cd)             | mg/L       | 0.01            | <0,002              |
| Dissolved manganese (Mn)           | mg/L       | -               | 0,39                |
| Dissolved Zinc (Zn)                | mg/L       | 0.05            | <0,008              |
| Dissolved Copper (Cu)              | mg/L       | 0.02            | 0,008               |
| Lead (Pb)                          | mg/L       | 0.03            | <0,02               |
| Chrome hexavalent (Cr-VI)          | mg/L       | 0.05            | <0,01               |
| Oils and Grease                    | mg/L       | 1               | <1,0                |
| Total detergent as MBAS            | mg/L       | 0.2             | <0,025              |
| Phenol                             | mg/L       | 0,005           | <0,001              |
| Fecal Coliform                     | MPN/100 mL | 2,000           | 9                   |
| Total Coliform                     | MPN/100 mL | 10,000          | 25                  |

Source: Laboratory analytical results (PT BMT Asia, May 2026)

**d. Effluent Quality**

To evaluate the performance of the on-site Wastewater Treatment Plant (WWTP), treated effluent samples were collected from the final discharge point (AL-1) and analyzed in accordance with the applicable wastewater quality standards. The analytical results were compared with the regulatory threshold values to assess compliance with the environmental discharge requirements. The monitoring results are presented in Table 5-1 below.

**Table 5.8. Effluent Analytical Results**

| Parameters                     | Unit         | Threshold Value | Effluent WWTP (AL-1) |
|--------------------------------|--------------|-----------------|----------------------|
| pH                             | -            | 6-9             | 7,8                  |
| Biological oxygen demand (BOD) | mg/L         | 30              | 4                    |
| Chemical oxygen demand (COD)   | mg/l         | 100             | 11                   |
| Total suspended solids (TSS)   | mg/l         | 30              | 2                    |
| Oils and Grease                | mg/l         | 5               | <3                   |
| Amonia, NH <sub>3</sub> -N     | mg/L         | 10              | <0,1                 |
| Total coliform                 | Total/100 ml | 3.000           | 59                   |

Source: Laboratory analytical results (PT BMT Asia, May 2026)

The analysis results indicate that all analyzed parameters comply with the applicable wastewater effluent quality standards. The measured pH of 7.8 falls within the permissible range of 6–9, indicating neutral conditions suitable for discharge. Organic pollution indicators, including Biological Oxygen Demand (BOD) and Chemical Oxygen Demand (COD), were substantially below their respective regulatory limits.

Similarly, the concentrations of Total Suspended Solids (TSS), Oil and Grease, and Ammonia (NH<sub>3</sub>-N) were significantly lower than the prescribed threshold values. The Total Coliform count was also well below the maximum allowable limit, suggesting satisfactory microbiological treatment performance.

#### e. Groundwater Quality

Groundwater Quality within dr. H. Marzoeqi Mahdi Hospital project area. One (1) grab samples of groundwater were collected at one site representing Menteng sub-district.

The analytical result of these water samples is presented in the following table. The analytical result indicated that all groundwater parameters were analyzed below the threshold values stipulated in this MoH regulation and interpreted against the threshold values stipulated in the *Minister of Health (MoH) Regulation No. 2/2023 on the Implementation of Government Regulation No. 66/2014 on Environmental Hygiene, particularly on Water Quality Standards for Hygiene and Sanitation Purposes*:

- All physical parameters did not exceed the threshold values, such as turbidity and color level were below their respective threshold values of <3 NTU (Nephelometric turbidity unit) and 10 TCU (true color unit).
- pH was around 7 or neutral and all other parameters were well below their threshold values, among others, the concentrations of chrome hexavalent and nitrite were measured well below their respective threshold values of 0.01 mg/L and 3 mg/L.
- Fecal and total coliforms were zero in the samples

**Table 5.9. Groundwater Analytical Results**

| Parameters                            | Unit       | Threshold Value | Menteng Subdistrict (AT-1) |
|---------------------------------------|------------|-----------------|----------------------------|
| <b>Physical parameter</b>             |            |                 |                            |
| Odor                                  | -          | No odor         | No odor                    |
| Total dissolved solid (TDS)           | mg/L       | <300            | 40                         |
| Turbidity                             | NTU        | <3              | 2.4                        |
| Color                                 | TCU        | 10              | 4.9                        |
| <b>Chemical parameter</b>             |            |                 |                            |
| pH                                    | -          | 6.5 – 8.5       | 7.2                        |
| Iron (Fe)                             | mg/L       | 0.2             | 0.09                       |
| Chrome hexavalent (Cr <sup>6+</sup> ) | mg/L       | 0.01            | <0.03                      |
| Manganese (Mn)                        | mg/L       | 0.1             | 0.03                       |
| Nitrate (NO <sub>3</sub> -N)          | mg/L       | 20              | <0.08                      |
| Nitrite (NO <sub>2</sub> -N)          | mg/L       | 3               | <0.02                      |
| <b>Microbiological parameter</b>      |            |                 |                            |
| Total coliform                        | MPN/100 mL | 0               | 0                          |
| Fecal coliform                        | MPN/100 mL | 0               | 0                          |

Source: Laboratory Report of PT BMT Asia (May 2026)

**f. Hazardous Toxic Waste**

Hazardous waste is generated from various hospital activities, including medical services, laboratories, pharmaceutical services, facility maintenance, and wastewater treatment operations. The types and quantities of hazardous waste generated vary depending on the nature of the activities and are managed in accordance with the applicable hazardous waste management regulations. The existing hazardous waste generation at Marzoeqi Mahdi Hospital is summarized in Table 5-10.

**Table 5.10. Existing Hazardous Waste Generation**

| No | Hazardous Waste Type      | Hazardous Waste Code | Specific Source                                                                                                                                                                                                              | Estimated Hazardous Waste Generation (kg/month) |
|----|---------------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| 1  | Used Batteries            | A102d                | General and Mental Health Inpatient Wards, General and Mental Health Outpatient Clinics, Supporting Services.                                                                                                                | 5,05                                            |
| 2  | Infectious Clinical Waste | A337-1               | General and Mental Health Inpatient Wards, General and Mental Health Outpatient Clinics, Emergency Department (ED), Operating Theatre (OT), Delivery Room, Intensive Care Unit (ICU), Perinatology Unit, Mental Health Ward. | 1.558,40                                        |

| No | Hazardous Waste Type                                     | Hazardous Waste Code | Specific Source                                                                | Estimated Hazardous Waste Generation (kg/month) |
|----|----------------------------------------------------------|----------------------|--------------------------------------------------------------------------------|-------------------------------------------------|
| 3  | B3-Contaminated Laboratory Equipment                     | A337-4               | Laboratory                                                                     | 2,10                                            |
| 4  | Hazardous Waste Packaging (Expired Pharmaceutical Waste) | B104d                | Hemodialysis Unit                                                              | 2,00                                            |
| 5  | Expired Chemicals                                        | A337-3               | Pharmacy                                                                       | 10,00                                           |
| 6  | Pharmaceutical Product Packaging                         | B337-1               | Pharmacy Warehouse                                                             | 5,00                                            |
| 7  | Pharmaceutical Product Packaging                         | B337-1               | Pharmacy Installation                                                          | 4,20                                            |
| 8  | WWTP Sludge                                              | B337-2               | WWTP                                                                           | 200,00                                          |
| 9  | Electronic Waste                                         | B107d                | Hospital Facility Maintenance Unit (IPSRs), Hospital Information System (SIRS) | 100,00                                          |
| 10 | Hazardous Waste Contaminated with B3 (Used X-ray Films)  | A108d                | Radiology Department                                                           | 2,00                                            |
| 11 | COVID-19 Waste (Rapid Test and Antigen Swab Waste)       | A337-1               | Drive thru, IGD, Laboratory, Pemping, Abimanyu.                                | 363,00                                          |
| 12 | COVID-19 Vaccination Waste                               | A337-1               | Vaccination Room                                                               | 8,00                                            |
| 13 | Used Lubricating Oil                                     | B105d                | WWTP, Genset, Vehicle Pool, Boiler.                                            | 5,00                                            |
|    | <b>Total Estimated Hazardous Waste Generation</b>        |                      |                                                                                | <b>2.264,75</b>                                 |

Source: RS dr. H. Marzoeqi Mahdi, 2026

The hospital generates approximately 2,264.75 kg of hazardous waste per month from both healthcare and supporting operational activities. Infectious clinical waste represents the largest waste stream, accounting for approximately 1,558.40 kg/month (approximately 68.8% of the total hazardous waste generated). Other significant hazardous waste streams include WWTP sludge (200.00 kg/month), COVID-19-related healthcare waste (363.00 kg/month), and electronic waste (100.00 kg/month).

The remaining hazardous waste consists of used batteries, expired chemicals, contaminated laboratory equipment, pharmaceutical packaging, used X-ray films, used lubricating oil, and other hazardous materials generated in relatively small quantities. All hazardous waste is segregated according to its characteristics, temporarily stored in the designated hazardous waste storage facility, and subsequently transported by licensed hazardous waste

management contractors for treatment and final disposal in accordance with the applicable national regulations.

### 5.1.3 Road and Traffic

#### a. Road Characteristic and Condition

The access road to Dr. H. Marzoeki Mahdi Hospital can be reached via Dr. Sumeru Road. Dr. Sumeru Road is a 2/2-lane road undivided and is 11 meters wide.



Figure 5.10. Condition of Dr. Sumeru Road

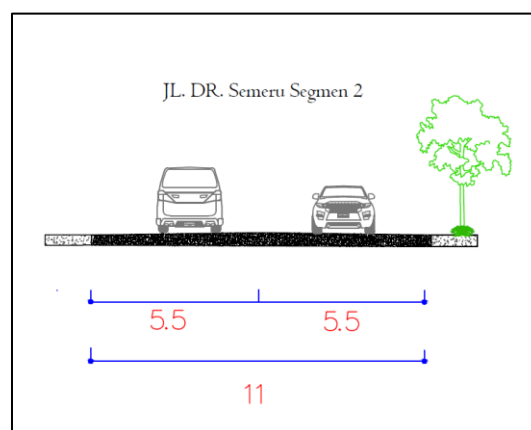


Figure 5.11. Coss Section Figure of Dr. Sumeru Road

#### b. Traffic Condition

Traffic conditions are assessed by calculating the Degree of Saturation (DS), in accordance with the 2023 Indonesian Road Capacity Guidelines. The formula for calculating DS is as follows:

$$DS = Q/C$$

Dimana:

DS = Degree of Saturation

Q = Traffic Volume (PCU/hour)

C = Road Capacity (PCU/hour)

The Q value is calculated based on the number of vehicles (motorcycles, cars, trucks, buses, etc.) counted during the traffic count. The traffic count conducted was a rapid traffic count lasting 1 hour from 1:00 PM to 2:00 PM on a workday (May 20, 2026). A 24-hour traffic count survey was conducted on June 21–22, 2026, as part of the ANDALALIN study; however, the results of that study have not yet been obtained.

The number of each vehicle type is expressed in Passenger Car Units per Hour (PCU/Hour), with the following conversion factors for each vehicle type:

**Table 5.11. PCU Conversion Value**

| No. | Type of Vehicle           | PCU Conversion Value |
|-----|---------------------------|----------------------|
| 1.  | Passenger Car             | 1.00 PCU             |
| 2.  | Motorcycle                | 0.25 PCU             |
| 3.  | Heavy Vehicle (Truck/Bus) | 1.2 PCU              |

Source: Indonesian Road Capacity Guidelines/*Pedoman Kapasitas Jalan Indonesia* (PKJI), 2023

The results of the rapid traffic count that was conducted and their conversion based on the PCU Conversion Value are shown in the following table.

**Table 5.12. Rapid Traffic Counting Result**

| No. | Type of Vehicle           | Volume (Vehicle/Hr) | PCU Conversion Value | Equivalent Value (PCU/hr) |
|-----|---------------------------|---------------------|----------------------|---------------------------|
| 1.  | Passenger Car             | 855                 | 1.00 PCU             | 855                       |
| 2.  | Motorcycle                | 3,245               | 0.25 PCU             | 811.25                    |
| 3.  | Two-axle trucks           | 19                  | 1.2 PCU              | 22.80                     |
| 4.  | Buses / Three-axle trucks | 4                   | 1.2 PCU              | 4.80                      |
|     | Total                     | 4,123               | -                    | 1,693.85 PCU/hr           |

Source: Primary Survey, 20 May 2026 and Indonesian Road Capacity Guidelines/*Pedoman Kapasitas Jalan Indonesia* (PKJI), 2023

Road capacity (C) is estimated using general PKJI equation:

$$C = C_0 \times FC_{LW} \times FC_{DD} \times FC_{SF} \times FC_{CS}$$

Dimana:

$C_0$  = base capacity

$FC_{LW}$  = lane width adjustment factor

$FC_{DD}$  = directional distribution adjustment factor

$FC_{SF}$  = side friction adjustment factor

$FC_{CS}$  = city size adjustment factor

Estimation of road capacity according this equation are:

$$C = 2,900 \times 1.34 \times 1.00 \times 0.92 \times 1.00$$

$$C = 3.573 \text{ PCU/hour}$$

Degree of Saturation is calculated using the equation below:

$$DS = Q/C$$

$$DS = 1.693.85/3,573$$

$$DS = 0.47$$

Therefore, Degree of Saturation is calculated at 0.47

Although PKJI 2023 primarily evaluates road performance using the Degree of Saturation (DS) rather than explicitly assigning LOS categories, LOS terminology is still widely used in transportation studies and environmental assessments as an interpretative measure.

According to DS value, the LOS is categorized as category "C". Interpretation of each LOS category can be viewed in the table below.

| Level of Service (LoS) | Degree of Saturation (DS) | Operating Condition                                                                                |
|------------------------|---------------------------|----------------------------------------------------------------------------------------------------|
| A                      | $DS \leq 0.20$            | Free-flow conditions; drivers have complete freedom to select speed and maneuver.                  |
| B                      | 0.21 – 0.44               | Stable flow with minimal interference from other vehicles.                                         |
| C                      | 0.45 – 0.74               | Stable flow; interactions among vehicles become noticeable and maneuverability begins to decrease. |
| D                      | 0.75 – 0.84               | Approaching unstable flow; speed and maneuverability are significantly restricted.                 |
| E                      | 0.85 – 1.00               | Operating at or near capacity; minor disturbances may cause congestion.                            |
| F                      | $DS > 1.00$               | Breakdown flow; demand exceeds capacity, resulting in severe congestion and queuing.               |

## 5.2 Biodiversity Baseline

A biodiversity baseline provides an overview of existing ecological conditions within and around the project area. Biodiversity baseline in this study generally comprises of identification of flora, fauna, habitats, ecosystem characteristics, and ecological interactions that may be influenced by hospital development activities.

Survey of biodiversity baseline is carried through exploration method, recording flora and fauna species in hospital area and nearby ecosystem. The survey is conducted in 3 locations:

(1) FF-01, Cultivated vegetation in the form of green open spaces within the Marzoeqi Mahdi Psychiatric Hospital complex; (2) FF-02, Cultivated vegetation, consisting of yard vegetation and cassava plantation; (3) FF-03, Cultivated vegetation in the form of urban forest, which is part of the Bogor City Science and Agricultural Technology Park. The results of flora and fauna survey are listed in the table below.

**Table 5.13. Flora in Project Location and Surroundings**

| No. | Species Name                     | Local Name         | Survey Location |       |       | Conservation Status                          |              |
|-----|----------------------------------|--------------------|-----------------|-------|-------|----------------------------------------------|--------------|
|     |                                  |                    | FF-01           | FF-02 | FF-03 | GoI Regulation (MoE Regulation No. 106/2018) | IUCN Redlist |
| 1.  | <i>Alocasia macorrhizos</i>      | Giant Taro         | v               |       |       | -                                            | NE           |
| 2.  | <i>Annona muricata</i>           | Soursop            | v               |       |       | -                                            | LC           |
| 3.  | <i>Arenga pinnata</i>            | Sugar Palm         |                 |       | v     | -                                            | LC           |
| 4.  | <i>Artocarpus altilis</i>        | Breadfruit         |                 | v     |       | -                                            | NE           |
| 5.  | <i>Artocarpus heterophyllus</i>  | Jackfruit          | v               | v     |       | -                                            | LC           |
| 6.  | <i>Averrhoa carambola</i>        | Star Fruit         | v               |       |       | -                                            | NE           |
| 7.  | <i>Bambusa vulgaris</i>          | Bamboo             |                 | v     | v     | -                                            | LC           |
| 8.  | <i>Bougainvillea spectabilis</i> | Paper Flower       | v               |       |       | -                                            | LC           |
| 9.  | <i>Bunchosia argentea</i>        | Peanut Butter Tree |                 | v     |       | -                                            | NE           |
| 10. | <i>Carica papaya</i>             | Papaya             | v               |       | v     | -                                            | DD           |
| 11. | <i>Chrysophyllum cainita</i>     | Star Apple         |                 |       | v     | -                                            | LC           |
| 12. | <i>Colocasia esculenta</i>       | Breadfruit         | v               |       |       | -                                            | LC           |
| 13. | <i>Dimocarpus longan</i>         | Longan             | v               |       |       | -                                            | NT           |
| 14. | <i>Durio zibethinus</i>          | Durian             |                 |       | v     | -                                            | NE           |
| 15. | <i>Elaeis guineensis</i>         | Oil Palm           |                 |       | v     | -                                            | LC           |
| 16. | <i>Falcataria molucana</i>       | Albizia            |                 | v     |       | -                                            | LC           |
| 17. | <i>Ficus benjamina</i>           | Fig                | v               |       |       | -                                            | LC           |
| 18. | <i>Hibiscus tiliaceus</i>        | Sea Hibiscus       |                 | v     | v     | -                                            | LC           |
| 19. | <i>Kigelia africana</i>          | Sausage Tree       | v               |       |       | -                                            | LC           |

| No. | Species Name                 | Local Name      | Survey Location |       |       | Conservation Status                          |              |
|-----|------------------------------|-----------------|-----------------|-------|-------|----------------------------------------------|--------------|
|     |                              |                 | FF-01           | FF-02 | FF-03 | GoI Regulation (MoE Regulation No. 106/2018) | IUCN Redlist |
| 20. | <i>Mangifera indica</i>      | Mango           | v               |       |       | -                                            | DD           |
| 21. | <i>Manihot esculenta</i>     | Cassava         | v               | v     |       | -                                            | NE           |
| 22. | <i>Mimusops elengi</i>       | Spanish Cherry  | v               |       |       | -                                            | LC           |
| 23. | <i>Morus alba</i>            | White Mulberry  |                 | v     |       | -                                            | LC           |
| 24. | <i>Muntingia calabura</i>    | Jamaican Cherry |                 |       | v     | -                                            | NE           |
| 25. | <i>Musa paradisiaca</i>      | Banana          | v               | v     |       | -                                            | NE           |
| 26. | <i>Myristica fragrans</i>    | Nutmeg Tree     |                 |       | v     | -                                            | DD           |
| 27. | <i>Nephelium lappaceum</i>   | Rambutan        | v               |       | v     | -                                            | LC           |
| 28. | <i>Persea americana</i>      | Avocado         | v               |       |       | -                                            | LC           |
| 29. | <i>Plumeria rubra</i>        | Red Frangipani  | v               |       |       | -                                            | LC           |
| 30. | <i>Psidium guajava</i>       | Guava           | v               |       |       | -                                            | LC           |
| 31. | <i>Pterocarpus indicus</i>   | Narra           |                 |       | v     | -                                            | VU           |
| 32. | <i>Samanea saman</i>         | Rain Tree       |                 | v     |       | -                                            | LC           |
| 33. | <i>Spondias dulcis</i>       | Kedondong       |                 |       | v     | -                                            | NE           |
| 34. | <i>Solanum melongena</i>     | Eggplant        |                 | v     |       | -                                            | NE           |
| 35. | <i>Swietenia macrophylla</i> | Mahogany        | v               |       |       | -                                            | EN           |
| 36. | <i>Syzygium aqueum</i>       | Water Cherry    | v               |       |       | -                                            | LC           |
| 37. | <i>Syzygium cumini</i>       | Java Plum       | v               |       |       | -                                            | LC           |
| 38. | <i>Tectona grandis</i>       | Teak            | v               |       |       | -                                            | EN           |
| 39. | <i>Terminalia catappa</i>    | Tropical Almond | v               |       |       | -                                            | LC           |
| 40. | <i>Theobroma cacao</i>       | Cacao           | v               |       | v     | -                                            | NE           |

Source: Primary Survey, 2026

Note:

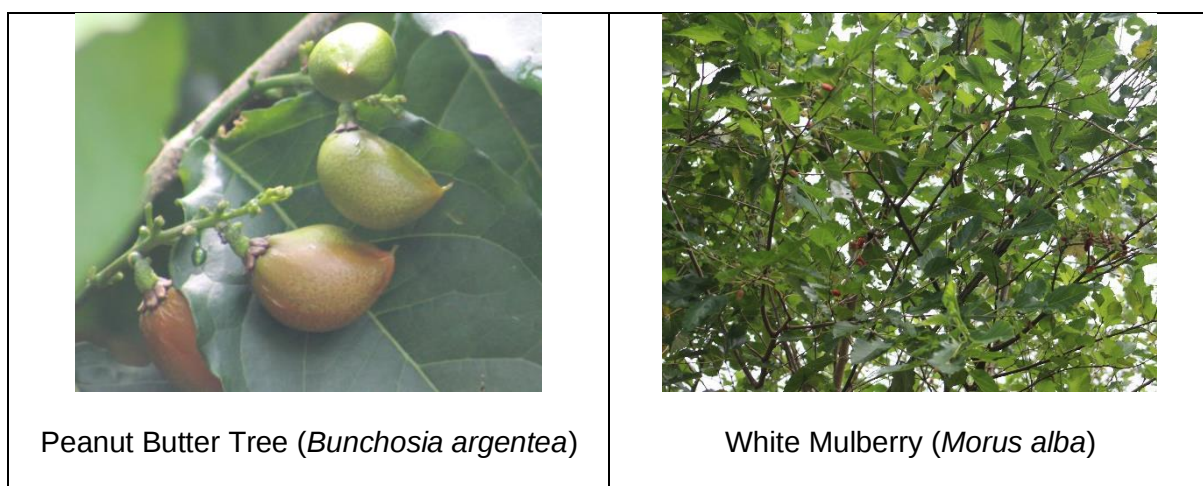
FF-01 = Marzoeqi mahdi hospital green open space

FF-02 = Yard vegetation &amp; cassava plantation

FF-03 = Urban Forest

IUCN Redlist Conservation Status = LC: Least Concern; EN: Endangered; NE: Not Evaluated; DD: Data Deficient

Based on flora survey results, the habitat in Dr. H. Marzoeqi Mahdi Hospital and its surrounding location is categorized as modified habitat, namely green open space, yard, and urban forest. The vegetation in the area are deliberately planted by the human to fulfill various needs, in this case, as water retention, pollution absorbtion, and shading. According to Gol Regulation on protected species (MoE Regulation No. 106 of 2018), no flora species are categorized as protected. However, according to IUCN Redlist, some species are found to have high conservation status, namely Mahogany (*Swietenia macrophylla*) and Teak (*Tectona grandis*) with conservation status determined as *Endangered*. These flora species are found in the green open space of Dr. H. Marzoeqi Mahdi Hospital and serves as carbon sequestering vegetation and water retention capacity.



**Figure 5.12 Documentation of Flora in Project Area and Surroundings**

**Table 5.14. Fauna in Project Location and Surroundings**

| No.      | Species Name                  | Local Name    | Survey Location |       |       | Conservation Status                          |              |
|----------|-------------------------------|---------------|-----------------|-------|-------|----------------------------------------------|--------------|
|          |                               |               | FF-01           | FF-02 | FF-03 | Gol Regulation (MoE Regulation No. 106/2018) | IUCN Redlist |
| Mammalia |                               |               |                 |       |       |                                              |              |
| 1.       | <i>Callosciurus notatus</i>   | Coconut Shrew | v               |       |       | -                                            | LC           |
| 2.       | <i>Canis lupus</i>            | Dog           |                 |       | v     | -                                            | LC           |
| 3.       | <i>Capra aegagrus hircus</i>  | Goat          |                 |       | v     | -                                            | NE           |
| 4.       | <i>Felis catus</i>            | Cat           | v               |       | v     | -                                            | NE           |
| Aves     |                               |               |                 |       |       |                                              |              |
| 5.       | <i>Acridotheres javanicus</i> | Javan Myna    |                 |       | v     | -                                            | VU           |

| No.      | Species Name                          | Local Name                  | Survey Location |       |       | Conservation Status                          |              |
|----------|---------------------------------------|-----------------------------|-----------------|-------|-------|----------------------------------------------|--------------|
|          |                                       |                             | FF-01           | FF-02 | FF-03 | GoI Regulation (MoE Regulation No. 106/2018) | IUCN Redlist |
| 6.       | <i>Collocalia esculenta</i>           | Glossy Swiftlet             | v               | v     | v     | -                                            | LC           |
| 7.       | <i>Dicaeum trochileum</i>             | Scarlet-headed Flowerpecker | v               |       |       | -                                            | LC           |
| 8.       | <i>Hirundo rustica</i>                | Barn Swallow                | v               |       |       | -                                            | LC           |
| 9.       | <i>Lonchura maja</i>                  | Javan Munia                 |                 |       | v     | -                                            | LC           |
| 10.      | <i>Psilopogon haemacephalus</i>       | Coppersmith Barbet          | v               |       |       | -                                            | LC           |
| 11.      | <i>Pycnonotus aurigaster</i>          | Sooty-Headed Bulbul         | v               | v     |       | -                                            | LC           |
| 12.      | <i>Passer montanus</i>                | Eurasian Tree Sparrow       | v               | v     | v     | -                                            | LC           |
| 13.      | <i>Spilopelia chinensis</i>           | Spotted Dove                |                 | v     | v     | -                                            | LC           |
| Reptilia |                                       |                             |                 |       |       |                                              |              |
| 14.      | <i>Bronchocela jubata</i>             | Maned Forest Lizard         | v               |       |       | -                                            | LC           |
| Amphibia |                                       |                             |                 |       |       |                                              |              |
| 15.      | <i>Eleutherodactylus planirostris</i> | Greenhouse Frog             |                 | v     |       | -                                            | LC           |

Source: Primary Survey, 2026

Note:

FF-01 = Marzoeqi mahdi hospital green open space

FF-02 = Yard vegetation &amp; cassava plantation

FF-03 = Urban Forest

IUCN Redlist Conservation Status = LC: Least Concern; EN: Endangered; NE: Not Evaluated; DD: Data Deficient

Based on fauna survey conducted in project area and its surroundings, the identified fauna in the location are fauna which usually inhabit urban areas. Bird group (Aves) are found the most due to its mobilization capability. According to GoI Regulation on protected species (MoE Regulation No. 106 of 2018) and IUCN Redlist, no fauna species are categorized as protected or having high conservation status.



Figure 5.13. Documentation of Fauna in Project Area and Surroundings

### 5.3 Social-Economic Baseline

#### 5.3.1 Social-Economic Profile of the Area of Influence

##### 5.3.1.1 Demographic Characteristic

The Project is located within Menteng Sub-District, West Bogor District, Bogor City, West Java Province. As the settlement area located closest to the Project site, Menteng Sub-District is considered the primary Area of Influence (AoI) for the social assessment.

According to the Population Data Visualization of the Ministry of Home Affairs (2026), Menteng Sub-District has a total population of 18,155 persons, comprising 9,077 males and 9,078 females. The nearly equal gender composition indicates a balanced demographic structure. The total number of households is recorded at 6,097 households, resulting in an average household size of approximately three persons per household.

With a total area of approximately 2.23 km<sup>2</sup>, Menteng Sub-District has a population density of around 8,141 persons/km<sup>2</sup>, reflecting the characteristics of a densely populated urban area.

Such conditions indicate high demand for public services, transportation infrastructure, healthcare facilities, and other social amenities.

Table 5.15. *Population Size and Desity of Menteng Sub District*

| Sub-District | Population |        |        | Number of Household | Total Area (km <sup>2</sup> ) | Population Density (Person/km <sup>2</sup> ) |
|--------------|------------|--------|--------|---------------------|-------------------------------|----------------------------------------------|
|              | Male       | Female | Total  |                     |                               |                                              |
| Menteng      | 9.077      | 9.078  | 18.155 | 6.097               | 2,23                          | 8.141                                        |

Source: *Population Data Visualization, Ministry of Home Affairs, 2026*

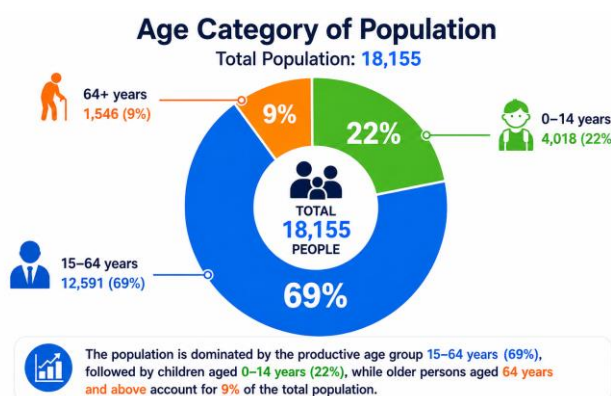
The population growth rate in Menteng Sub-District has remained relatively stable over recent years, ranging between 1% and 2% annually. This trend suggests a relatively mature urban settlement with moderate demographic growth.

Table 5.16. *Population Growth Rate*

| Year | Population Growth Rate (%) |
|------|----------------------------|
| 2020 | 2                          |
| 2021 | 1                          |
| 2022 | 1                          |
| 2023 | 1                          |
| 2024 | 1                          |

Source: *Population Data Visualization, Ministry of Home Affairs, 2026*

The age structure of the population is dominated by the productive age group (15–64 years), accounting for approximately 69% of the total population. Children aged 0–14 years represent around 22%, while elderly residents aged above 64 years account for approximately 9%. The relatively large working-age population indicates the availability of local labour resources that may benefit from employment opportunities generated by the Project.



**Figure 5.14 Population Based on Age Category**

### 5.3.1.2 Education Condition

Education is an important indicator of human capital and socioeconomic development. Based on statistical data, educational facilities within the area are considered adequate to serve the local population. Educational facilities in Menteng Sub-District include elementary, junior secondary, and senior secondary schools.

**Table 5.17. Number of School Base on Education Level in Menteng Sub-District**

| Sub-District | Number of Schools                |                                   |                                   |
|--------------|----------------------------------|-----------------------------------|-----------------------------------|
|              | Elementary School/<br>Equivalent | Junior High School/<br>Equivalent | Senior High School/<br>Equivalent |
| Menteng      | 6                                | 2                                 | 3                                 |

Source : Bogor Barat District in Figures, BPS-Statistic Indonesia 2025

The educational attainment profile indicates that a significant proportion of residents have completed secondary and tertiary education. Senior high school graduates represent the largest educational category, while a substantial number of residents have obtained diploma and university degrees. This reflects the urban characteristics of the area and suggests the availability of a relatively educated and skilled population.

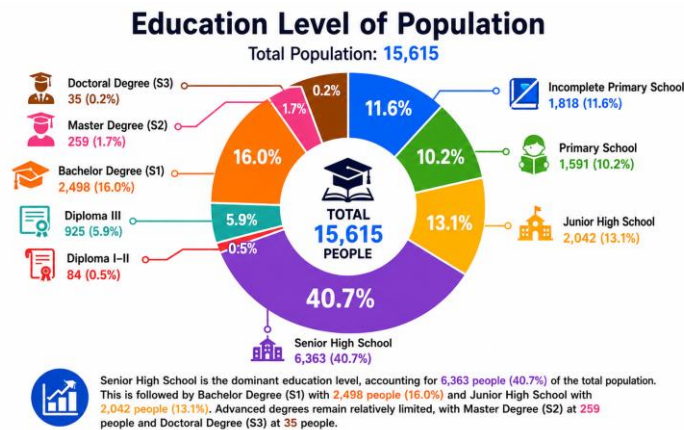


Figure 5.15 Educational Attainment of Population

### 5.3.1.3 Employment and Livelihood

The socioeconomic characteristics of Menteng Sub-District reflect its urban setting, where livelihoods are largely associated with service-based activities, small businesses, government services, education, healthcare, and informal economic activities.

Based on population records, a significant proportion of residents are students, homemakers, self-employed workers, and service sector employees. The presence of teachers, nurses, and other professional occupations indicates that the local economy is strongly influenced by urban service activities

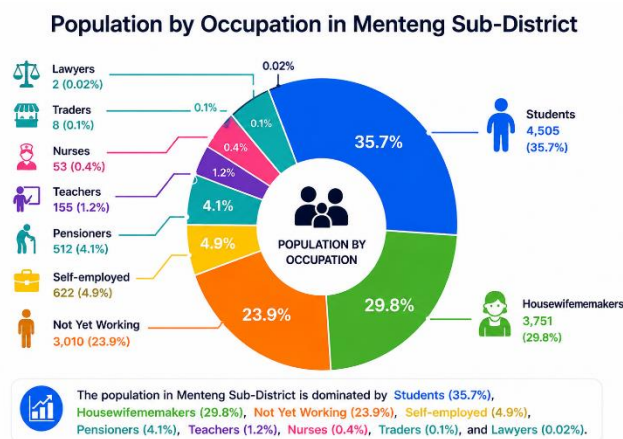


Figure 5.16 Population by Occupation

The predominance of the productive-age population, combined with relatively high educational attainment, indicates the availability of local human resources that may potentially benefit from employment and business opportunities associated with the Project.

### 5.3.1.4 Religion and Socio-Cultural Characteristic

Menteng Sub-District is characterized by a diverse social and cultural composition typical of urban communities in Bogor City. The population consists of various religious groups, although Islam is the dominant religion.

The diversity of religious affiliations reflects the multicultural nature of the area and highlights the importance of inclusive stakeholder engagement during project planning and implementation.

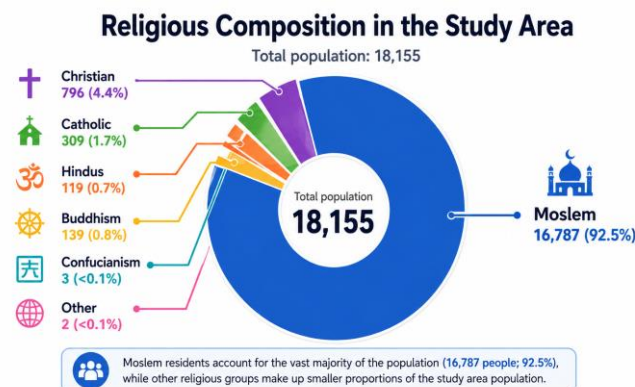


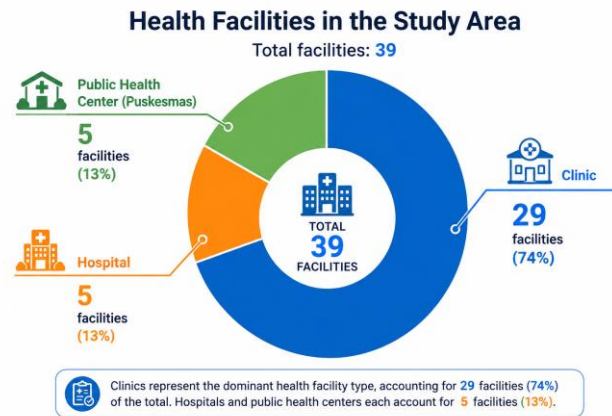
Figure 5.17 Population by Religion

## 5.3.2 Community Health, Safety and Security Conditions

### 5.3.2.1 Access to Health Services

The Project is located within Menteng Sub-District, Bogor Barat District, Bogor City, an urban area with relatively good access to health services. Based on Bogor Barat District in Figures (2025), the district is served by various health facilities, including hospitals, public health centers, and clinics.

The presence of dr. H. Marzoeki Mahdi Hospital (RSMM) itself plays an important role in providing specialized and referral healthcare services for the surrounding communities. The availability of health facilities within the district indicates that the population has adequate access to healthcare services.



**Figure 5.18 Health Facilities in Bogor Barat District**

Findings from the household survey indicate that residents generally have good access to healthcare services. Approximately 48% of respondents reported utilizing private clinics or doctors as their primary healthcare provider, while 45% accessed services through public health centers (*Puskesmas*). Only a small proportion relied directly on hospitals for routine treatment.

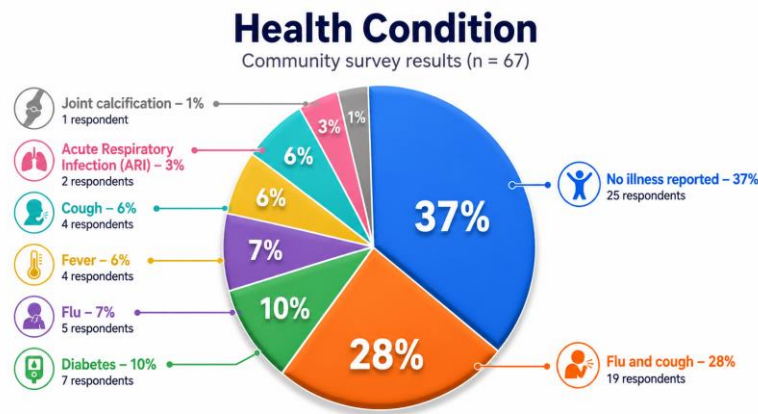


**Figure 5.19 Primary Healthcare Facility Utilized by Respondents**

### 5.3.2.2 Community Health Conditions

The health profile of surveyed households indicates generally good health conditions among residents. Around 37% of respondents reported no significant illness during the past year. The most common health complaints included influenza and cough-related illnesses, while a smaller proportion reported diabetes, fever, respiratory infections, and age-related health conditions.

The prevalence of respiratory-related illnesses, although relatively limited, indicates that dust generation and air quality disturbances during construction activities may become a concern for nearby residents if not properly managed.



**Figure 5.20 Reported Health Conditions During the Last 12 Months**

### 5.3.2.3 Water Supply, Sanitation and Waste Management

The survey results indicate that access to basic water and sanitation services is generally adequate. All surveyed households reported using piped water supplied by the local water utility (PDAM) for sanitation and domestic purposes. For drinking water, 69% of respondents use bottled or refillable gallon water, while the remaining households use PDAM water.

All surveyed households have access to private toilet facilities, indicating full sanitation coverage among respondents. In addition, municipal waste collection services are available and utilized by all surveyed households.

The findings suggest that basic public health infrastructure in the Project area is well established. However, protection of existing PDAM pipelines and utility infrastructure during construction remains important, as community consultations identified previous disturbances to water supply networks during nearby development activities.

### 5.3.2.4 Community Safety and Security Concerns

Consultations with local government representatives and community members identified several community safety concerns associated with previous development activities around the RSMM area.

The most frequently reported issues included:

- Traffic congestion caused by construction vehicles;
- Increased noise levels;
- Dust generation affecting residential areas;
- Damage to local roads;
- Temporary disruption of public utility services, particularly water supply infrastructure;
- Localized flooding and drainage-related issues during periods of heavy rainfall.

Survey results indicate that flooding and disturbance to public facilities are among the primary concerns of nearby residents regarding the planned hospital expansion.

In addition, residents emphasized the importance of maintaining safe traffic management during construction, particularly along Jalan dr. Semeru, which serves as a major access route for local communities and hospital visitors.

#### **5.3.2.5 Community Perceptions on Safety and Environmental Risks**

The household survey indicates strong support for the proposed RSMM development. All respondents expressed support for the Project, mainly due to expectations of improved healthcare services, employment opportunities, and local economic benefits.

Despite this positive perception, residents highlighted several risks that require effective management during project implementation. The most frequently identified concerns include noise, dust emissions, traffic disturbances, environmental nuisance, and flood risks associated with drainage changes.

Community members also emphasized the need for:

- Early and transparent information disclosure;
- Regular communication with surrounding communities;
- Accessible grievance mechanisms;
- Timely response to community complaints;
- Proper management of construction-related environmental impacts.

These concerns have been considered during the impact assessment process and are reflected in the Environmental and Social Management Plan (ESMP).

Based on the baseline assessment, the Project Area of Influence demonstrates relatively good access to healthcare, water supply, sanitation, and public services. Nevertheless, nearby communities remain sensitive to construction-related disturbances, particularly noise, traffic, dust emissions, drainage performance, and disruptions to public utilities. These issues represent key Community Health, Safety and Security (CHSS) considerations and have therefore been incorporated into the environmental and social impact assessment and management measures presented in subsequent chapters.

### **5.3.3 Gender and Vulnerable Groups**

#### **5.3.3.1 Gender Composition and Gender Considerations**

Based on population data from the Ministry of Home Affairs (2026), the population of Menteng Sub-District is relatively balanced between males and females, comprising 9,077 males (50.0%) and 9,078 females (50.0%). This indicates that both men and women represent

important stakeholder groups that may be affected by, or benefit from, the proposed hospital development.

The household survey conducted among 67 affected households (AHs) showed that 79% of respondents were male household heads, while 21% were female household heads. Although female-headed households represent a smaller proportion of surveyed households, they remain an important stakeholder group requiring consideration during project planning and implementation.

In terms of educational attainment, the surveyed population demonstrates a relatively high educational background, with 76% of respondents having completed diploma or university-level education. This suggests that most community members possess adequate capacity to understand project information and participate meaningfully in consultation and decision-making processes.

In addition to the surrounding communities, gender considerations were also assessed within the context of hospital operations, as RSMM represents both the primary project beneficiary and the principal institutional receptor. Based on Human Resources data provided by RSMM, the hospital employs a total of 767 personnel, consisting of 589 health personnel (76.8%) and 178 non-health personnel (23.2%). Overall, the workforce comprises 303 male employees (39.5%) and 464 female employees (60.5%), indicating that women constitute the majority of the hospital workforce.

**Table 5.18 Gender Composition of RSMM Workforce**

| Occupational Category  | Male       | Female     | Total      | Female (%)  |
|------------------------|------------|------------|------------|-------------|
| Health Personnel       | 193        | 396        | 589        | 67.2        |
| Non-Health Personnel   | 110        | 68         | 178        | 38.2        |
| <b>Total Workforce</b> | <b>303</b> | <b>464</b> | <b>767</b> | <b>60.5</b> |

Source: RSMM Human Resources Data, 2026.

Women are particularly well represented among health personnel, accounting for approximately 67% of all healthcare staff. Female personnel occupy a broad range of professional positions, including nurses, midwives, pharmacists, psychologists, nutritionists, laboratory personnel, public health professionals, and specialist medical practitioners, reflecting their critical role in the delivery of healthcare services at RSMM.

The review of staffing data further indicates that women are also strongly represented among specialist and sub-specialist medical professionals. Of the 50 specialist and sub-specialist doctors employed by RSMM, 30 (60%) are women and 20 (40%) are men, demonstrating that female healthcare professionals play a significant role not only in nursing and patient care but also in highly specialized clinical services.

**Table 5.19 Gender Composition of Specialist and Sub-specialist Doctors**

| Medical Category                             | Male | Female | Total | Female (%) |
|----------------------------------------------|------|--------|-------|------------|
| <b>Specialist and Sub-specialist Doctors</b> | 20   | 30     | 50    | 60.0       |

Source: RSM Human Resources Data, 2026.

Gender representation within hospital management is also an important consideration in assessing institutional capacity to promote inclusive decision-making and gender-responsive project implementation. Management-level participation of women contributes to equitable leadership, strengthens gender mainstreaming within hospital governance, and supports the effective implementation of environmental and social commitments

**Table 5.20 Gender Representation in Management Positions**

| Management Position                       | Male | Female | Total | Female (%) |
|-------------------------------------------|------|--------|-------|------------|
| <b>Director</b>                           | 0    | 1      | 1     | 100        |
| <b>Deputy Directors</b>                   | 2    | 1      | 3     | 33         |
| <b>Heads of Medical Departments (KSM)</b> | 3    | 0      | 3     | 0          |
| <b>Heads of Units / Installations</b>     | 11   | 10     | 21    | 48         |
| <b>Heads of Administrative Divisions</b>  | 5    | 4      | 9     | 44         |
| <b>Total</b>                              | 21   | 16     | 37    | 43         |

Source: RSM Human Resources Data, 2026.

Given the workforce composition, women are expected to be among the principal beneficiaries of the Project through improved working environments, enhanced healthcare facilities, and expanded service capacity. At the same time, female workers, patients, caregivers, and visitors may experience different levels of exposure to construction-related disturbances such as temporary access restrictions, traffic disruptions, noise, dust, and changes in hospital circulation patterns. Accordingly, gender-responsive measures have been incorporated into the Project design and Environmental and Social Management Plan (ESMP), including safe pedestrian access, effective stakeholder communication, accessible grievance mechanisms, and specific measures to prevent and respond to Gender-Based Violence, Sexual Exploitation and Abuse, and Sexual Harassment (GBV/SEA/SH), in accordance with the AIIB Environmental and Social Framework.

### 5.3.3.2 Vulnerable Groups

Vulnerable groups are individuals or households that may experience greater difficulty in accessing project information, participating in decision-making processes, or coping with environmental and social impacts resulting from project activities.

Based on demographic data and field surveys, the following vulnerable groups were identified within the Area of Influence (AoI):

**Table 5.21. Identified Vulnerable Groups in the Area of Influence**

| <b>Vulnerable Group</b>          | <b>Basis of Identification</b>                                            | <b>Potential Vulnerability</b>                                                                           |
|----------------------------------|---------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| <b>Elderly persons</b>           | Approximately 1,546 residents (9% of total population) aged over 64 years | More sensitive to noise, dust, traffic disruption, and changes in access to services                     |
| <b>Female-headed households</b>  | 14 households (21% of surveyed AHs)                                       | Potential constraints in accessing livelihood opportunities and participating in consultation activities |
| <b>Persons with disabilities</b> | Identified during community consultations and survey responses            | May face accessibility barriers and require inclusive communication mechanisms                           |
| <b>Children and adolescents</b>  | Approximately 22% of population below 15 years old                        | More sensitive to traffic safety risks, noise, and environmental disturbances                            |
| <b>Low-income households</b>     | Identified through household expenditure and income data                  | Potentially more vulnerable to temporary economic disruption and increased living costs                  |

Community survey results also indicate that respondents recognize the presence of vulnerable groups in the surrounding community. Among respondents identifying vulnerable populations, elderly persons were most frequently mentioned (53%), followed by women (5%) and persons with disabilities (5%).

In addition to vulnerable groups identified within the surrounding community, several vulnerable groups are directly associated with hospital operations and healthcare service delivery. These groups may experience heightened sensitivity to temporary disruptions, restricted access, environmental disturbances, or safety risks arising from construction and operational activities.

**Table 5.22 Vulnerable Groups Associated with Hospital Operation**

| <b>Vulnerable Group</b>              | <b>Potential Vulnerability</b>                                                                         |
|--------------------------------------|--------------------------------------------------------------------------------------------------------|
| <b>Psychiatric patients</b>          | May have limited capacity to respond to emergencies, changes in routine, or environmental disturbances |
| <b>Elderly patients</b>              | More sensitive to noise, dust, mobility constraints, and access disruptions                            |
| <b>Persons with disabilities</b>     | May require accessible infrastructure, communication support, and assisted mobility                    |
| <b>Women patients and caregivers</b> | May have specific safety, privacy, and accessibility needs                                             |
| <b>Children and adolescents</b>      | More vulnerable to traffic safety risks and environmental disturbances                                 |
| <b>Low-income patients</b>           | Potentially more sensitive to increased costs or disruptions to healthcare access                      |



**Figure 5.21 Accessibility options for people with disabilities**

### **5.3.3.3 Gender, GBV/SEAH and Vulnerability Assessment**

Community consultations and stakeholder engagement activities indicate no evidence of systematic exclusion of women from community participation processes. Women actively participate in community organizations, household decision-making, and healthcare-related activities.

At the institutional level, RSMM employs a workforce in which women represent approximately 60.5% of total employees. This indicates that women play a significant role in hospital operations and service delivery. In line with national regulations governing public services and employment, the hospital applies principles of non-discrimination and equal opportunity in workforce participation.

No significant incidents of Gender-Based Violence (GBV) or Sexual Exploitation, Abuse and Harassment (SEAH) associated with the Project have been identified during the baseline assessment. Nevertheless, healthcare facilities involve regular interaction among patients, visitors, healthcare workers, contractors, and service providers. During construction activities, the temporary presence of external workers may create potential risks related to inappropriate behavior, workplace harassment, discrimination, or unequal treatment.

In addition to women, children, older persons, and persons with disabilities, the Project Area of Influence includes psychiatric inpatients receiving treatment within RSMM. Some patients may have reduced decision-making capacity, limited mobility, or diminished ability to communicate or report inappropriate behaviour. These characteristics increase their vulnerability to potential risks associated with the presence of external workers during construction activities. Accordingly, psychiatric inpatients are considered a vulnerable group requiring additional safeguards throughout Project implementation.

Although the overall GBV and SEAH risk is considered low due to the urban setting and controlled institutional environment, preventive measures consistent with Good International Industry Practice (GIIP) will be incorporated into Project implementation. These measures

may include workforce codes of conduct, awareness training, grievance mechanisms, and procedures for reporting and responding to GBV/SEAH-related complaints.

Potential impacts on vulnerable groups may include temporary disturbances caused by noise, dust emissions, traffic congestion, restricted access, and changes in the hospital environment during construction activities. These impacts may be experienced more acutely by psychiatric patients, elderly persons, persons with disabilities, women, children, and individuals highly dependent on healthcare services.

The Project will therefore seek to ensure that stakeholder engagement, information disclosure, grievance mechanisms, and environmental and social management measures are accessible and responsive to the needs of women and vulnerable groups throughout project implementation.

#### **5.3.3.4 Key Considerations for Impact Assessment**

Based on the baseline assessment, the following groups will receive particular attention during impact assessment and ESMP development:

- Elderly residents living in close proximity to the hospital complex.
- Female-headed households.
- Persons with disabilities.
- Children and adolescents.
- Community members highly dependent on local healthcare services.
- Psychiatric patients receiving treatment within the hospital.
- Women patients, caregivers and female employees.

Potential impacts requiring further assessment include construction-related noise and dust, traffic safety risks, accessibility to healthcare services, community health and safety concerns, GBV/SEAH risks, and equitable access to project benefits such as employment and economic opportunities.

The findings of this assessment indicate that gender and vulnerability considerations are relevant both at the community level and within hospital operations. Women constitute the majority of the hospital workforce and represent a key user group of healthcare services, while vulnerable groups include elderly persons, persons with disabilities, psychiatric patients, women, children, and low-income households.

The results of this assessment will be used to inform the development of a Project-specific Gender Action Plan (GAP) and related management measures in accordance with AIIB Environmental and Social requirements and the AIIB guidance on integrating gender considerations into healthcare sector projects. The GAP will seek to promote inclusive

participation, equitable access to project benefits, prevention of GBV/SEAH risks, and protection of vulnerable groups throughout project implementation.

#### 5.3.4 Indigenous Peoples Screening

The applicability of AIIB Environmental and Social Standard (ESS) 3 on Indigenous Peoples was assessed through a review of the social and cultural characteristics of the Area of Influence (AoI), stakeholder consultations, and available information obtained from local government authorities.

The Project is located within Menteng Sub-District, West Bogor District, Bogor City, an established urban area characterized by formal administrative governance structures comprising neighborhood associations (RT/RW), the Kelurahan administration, and other government-recognized community institutions. The population consists of a heterogeneous urban community and is not organized as a distinct customary community governed by traditional institutions, customary laws, or collective customary land tenure systems.

Based on field observations, stakeholder consultations, and discussions with local government representatives, no Indigenous Peoples communities or *Masyarakat Hukum Adat* (MHA) were identified within the Project Area of Influence. The assessment did not identify the presence of customary territories, communal customary land rights (*tanah ulayat*), customary governance systems, or traditional resource-use practices associated with Indigenous Peoples within or adjacent to the Project site.

The Project area is situated within a densely populated urban environment that has long been integrated into the administrative and socio-economic structure of Bogor City. Community representation and decision-making processes are conducted through formal government institutions and community organizations, including RT/RW, Kelurahan, and other recognized local bodies. No customary institutions exercising traditional authority over land, natural resources, or community affairs were identified during the assessment.

Available information from local government sources indicates that Indigenous Peoples communities known within the broader Bogor region are generally located in rural areas of Bogor Regency, including customary communities such as Kasepuhan Urug and Kampung Budaya Sindangbarang. These communities are located outside the Project Area of Influence and have no territorial, cultural, social, or economic attachment to the Project site.

Based on the baseline assessment, stakeholder consultations, and available government information, no Indigenous Peoples communities meeting the criteria of AIIB ESS 3 were identified within the Project Area of Influence. Therefore, the Project is not expected to affect

Indigenous Peoples, and AIIB Environmental and Social Standard (ESS) 3 on Indigenous Peoples is considered Not Triggered.

### **5.3.5 Cultural Heritage Baseline**

#### **5.3.5.1 Historical Background of RSMM**

Dr. H. Marzoeqi Mahdi Hospital (RSMM) is the first psychiatric hospital in Indonesia, which starts operating in 1882 under the name *Hetkrankzinnigengesticht te Buitenzorg*. The hospital was originally established during the Dutch colonial period and has continuously functioned as a healthcare facility for more than a century. Over its long history, the hospital complex has developed into a healthcare campus consisting of medical facilities, supporting infrastructure, residential buildings, open spaces, and landscape features that reflect various stages of architectural and institutional development.

Several buildings within the hospital complex retain architectural characteristics associated with the colonial period, including building forms, façade elements, roof structures, spatial layouts, and landscape arrangements. These features contribute to the historical and cultural significance of the hospital complex and distinguish it from more recently developed healthcare facilities.

The long operational history of RSMM and the presence of historic structures indicate that the hospital complex may possess cultural heritage values that warrant further consideration during project planning and implementation.

#### **5.3.5.2 Potential Cultural Heritage Assets within the Project Area**

Based on field observations, stakeholder consultations, and preliminary information provided by hospital management, several buildings and landscape elements within the RSMM complex have been identified as having potential historical and cultural significance.

Community consultations undertaken as part of the ESIA process also indicate local recognition of historical assets within the hospital area. Survey results show that respondents identified colonial-era buildings and historical structures as the most important cultural heritage features associated with the Project area. The findings suggest that historical buildings within the RSMM complex are recognized by local stakeholders as possessing cultural value and should therefore be considered during project planning and impact assessment.

RSMM has received preliminary information from the Bogor City Tourism and Culture Office (*Dinas Pariwisata dan Kebudayaan Kota Bogor*) indicating that three buildings within the hospital complex have been identified as Potential Cultural Heritage Objects (Objek Diduga Cagar Budaya – ODCB). These buildings are considered to possess historical, architectural,

and cultural significance associated with the development of mental healthcare services in Indonesia and the historical evolution of the former *Krankzinnigengesticht te Buitenzorg*, established in 1882 and recognized as the oldest psychiatric hospital in Indonesia.

**Table 5.23 identified Potential Cultural Heritage Assets within RSMM**

| Asset                                          | Architectural and Historical Characteristics                                                                                                               | Historical Function                                                                                                | Current Function                                                       |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| <b>Gedung Rama</b>                             | Colonial-era ward building characterized by high ceilings, robust masonry construction, and distinctive iron columns typical of Dutch Indies architecture. | Psychiatric isolation ward for patients with severe mental disorders.                                              | Drug Dependence Recovery Unit ( <i>Instalasi Rehabilitasi NAPZA</i> ). |
| <b>Gedung Medical Check-Up</b>                 | Building within the historic hospital complex that has undergone adaptive functional transformation while maintaining its historical identity.             | Medical support and ancillary healthcare functions.                                                                | Integrated Medical Check-Up and Assessment Centre.                     |
| <b>Gedung Administrasi Pasien &amp; Dental</b> | Historic administrative building retaining elements of its original colonial façade and spatial organization.                                              | Administrative control point for admission and legal verification of psychiatric patients during the colonial era. | Patient Administration Centre and Dental Clinic.                       |

Source: RSMM Management, field observations, and preliminary information from the Bogor City Tourism and Culture Office (2026).

The locations of the identified ODCB buildings and historical artifacts within the RSMM complex are presented in Figure 5-22.

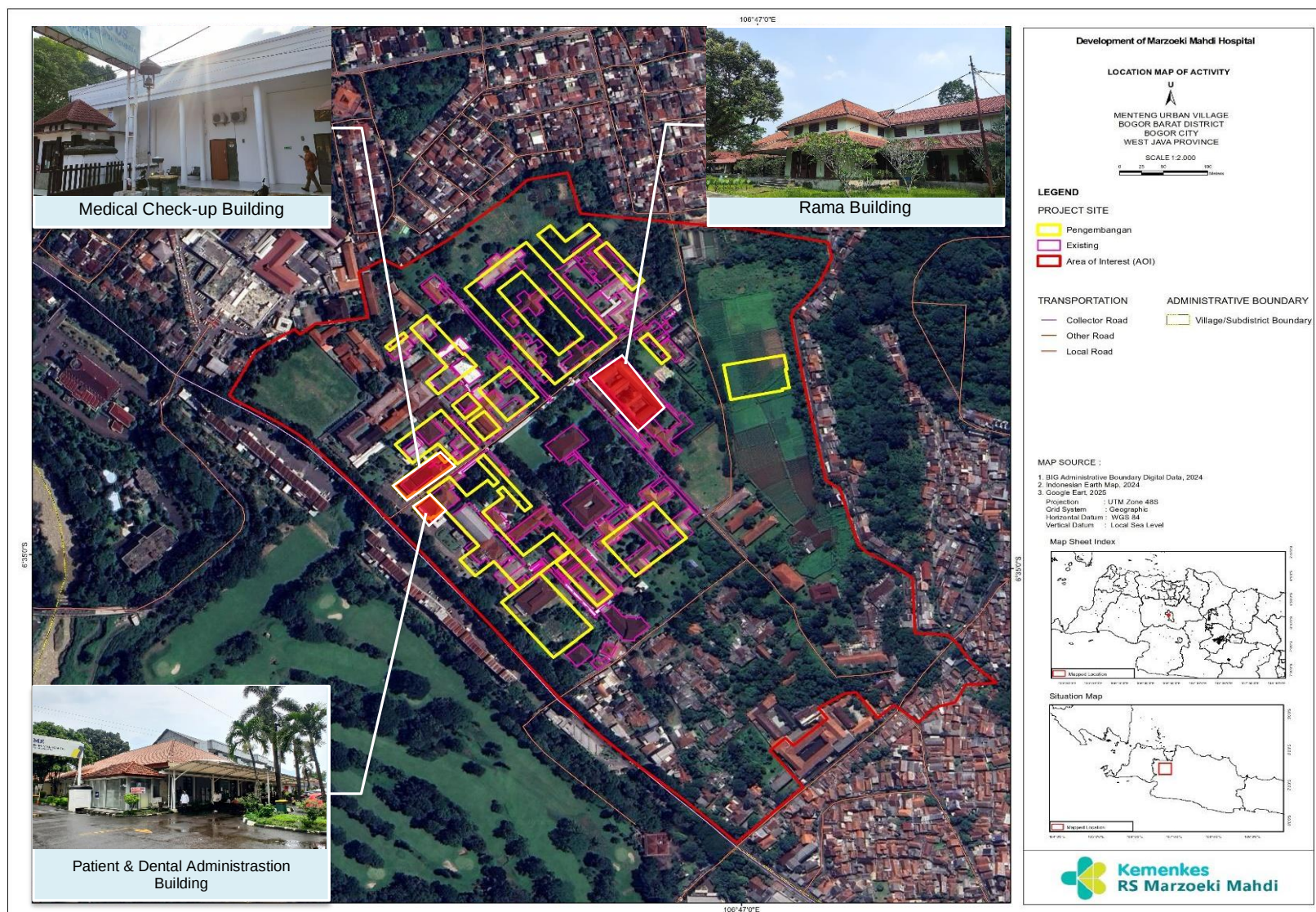


Figure 5.22. Location of Potential Cultural Heritage Assets within RSMM Complex

### ▪ Rama Building

Rama Building is one of the buildings identified as a Potential Cultural Heritage Object (ODCB) within the RSMM complex. The building forms part of the historic inpatient ward cluster developed during the Dutch colonial period and retains architectural characteristics typical of late nineteenth-century Dutch Indies institutional buildings. Notable features include high ceilings designed to enhance natural ventilation, robust structural elements, and iconic iron columns that contribute to the building's historical character.



**Figure 5.23 Rama Building**

Historically, the building functioned as a conventional psychiatric ward accommodating patients with severe mental disorders under the colonial mental health system. Since January 2001, the building has been repurposed as the Drug Dependence Recovery Unit (Instalasi Rehabilitasi NAPZA), providing rehabilitation services for individuals affected by substance dependency. This functional transformation reflects the evolution of mental healthcare services in Indonesia while maintaining the building's historical significance.

### ▪ Medical Check-Up Building

Medical Check-Up Building represents an example of adaptive reuse within the historic RSMM complex. While forming part of the broader heritage setting of the hospital, the building has evolved to accommodate contemporary healthcare needs through functional modernization.



**Figure 5.24 Medical Check-Up Building**

Historically, the surrounding area accommodated secondary medical support functions. Following spatial reorganization and service integration initiatives, the building was transformed into an Integrated Medical Check-Up and Assessment Centre and officially launched in 2023. The facility now provides one-stop services for physical health examinations, psychological assessments, MMPI testing, aptitude evaluations, and health certification services.

#### ■ Patient & Dental Administration Building

Patient & Dental Administration Building occupies a prominent position near the main entrance of the RSMM complex and serves as one of the most recognizable historic buildings within the hospital.



**Figure 5.25 Gedung Administrasi Pasien & Dental**

During the colonial period, the building functioned as an administrative control point where legal and institutional requirements were verified prior to patient admission. Under the colonial mental health regulatory framework, documentation and authorization procedures were processed through this facility before patients could enter treatment wards.

Today, the building functions as the Patient Administration Centre and Dental Clinic, providing registration services and oral healthcare to both hospital patients and the wider community. The continued use of the building for public-facing healthcare services demonstrates how historic structures can remain operational while preserving their historical identity.

The integration of general healthcare services within the building also contributes to reducing stigma historically associated with psychiatric institutions by reinforcing RSMM's role as an inclusive healthcare provider serving a broad spectrum of community needs.

The identified heritage assets demonstrate a successful example of adaptive reuse, whereby historically significant structures continue to serve contemporary healthcare functions while retaining their architectural and cultural significance. Rather than remaining unused, these buildings have undergone functional transformation in response to evolving healthcare needs while maintaining their historical association with the development of mental health services in Indonesia.

Based on the current Project design, no demolition, façade modification, or alteration of the principal architectural characteristics of the identified ODCB buildings is proposed. The proposed development has been designed to avoid direct impacts on these structures and to maintain their historical, architectural, and visual significance within the hospital complex.

Accordingly, the Project will adopt a heritage-sensitive approach that prioritizes the preservation of the historical values and visual character of the identified heritage assets. Any future renovation, rehabilitation, or maintenance activities undertaken in proximity to these structures will be implemented in consultation with the relevant authorities and in accordance with applicable cultural heritage protection requirements. This approach will support the long-term conservation of the historic RSMM complex while allowing the hospital to continue fulfilling its healthcare functions as a national referral centre for mental health services.

#### **5.3.5.3 Regulatory Status of Cultural Heritage Assets**

Several buildings and landscape elements within the RSMM complex have been identified as Potential Cultural Heritage Assets / Objects Suspected as Cultural Heritage (*Objek Diduga Cagar Budaya – ODCB*).

Although these assets have not yet been formally designated as Cultural Heritage under Law No. 11 of 2010 concerning Cultural Heritage, they remain subject to preliminary protection and further assessment due to their historical significance and heritage characteristics.

In accordance with Article 31 of Law No. 11 of 2010, objects, buildings, structures, sites, or areas proposed or identified as potential cultural heritage assets are afforded protection while the formal assessment and designation process is undertaken by the competent authority.

At the time of ESIA preparation, RSMM management has initiated coordination with the relevant government authorities, including the Tourism and Culture Office (Dinas Pariwisata dan Kebudayaan), to obtain clarification regarding the heritage status of buildings located within the project area. The assessment process remains ongoing and no formal designation decision has yet been issued.

Consequently, a precautionary approach has been adopted within this ESIA. Potential cultural heritage assets identified within the hospital complex are treated as sensitive receptors pending the outcome of the formal government assessment process.

#### **5.3.5.4 Cultural Heritage Sensitivity within the Project Area**

Considering the historical significance of RSMM and the presence of buildings identified as ODCB, cultural heritage is regarded as a sensitive receptor within the Project Area of Influence. Potential risks associated with project activities may include:

- Physical alteration or damage to historic buildings;
- Changes to architectural character and visual integrity;
- Vibration impacts from construction activities;
- Demolition or modification of structures with potential heritage value;
- Disturbance to historical landscape features;
- Loss of historical documentation or cultural significance.

In addition, construction activities may uncover previously undocumented historical features or archaeological remains. Therefore, the Project will adopt a Chance Finds Procedure consistent with Indonesian regulations and international good practice.

#### **5.3.5.5 Key Implications for ESIA**

Based on the baseline assessment, the RSMM complex contains several buildings and landscape elements that may possess cultural heritage significance. While these assets have not yet been formally designated as Cultural Heritage, they have been identified as ODCB and are currently under review by the relevant authorities.

Given the sensitivity of these assets and the requirements of both Indonesian Cultural Heritage legislation and AIIB Environmental and Social Standards, cultural heritage considerations

have been integrated into the impact assessment and Environmental and Social Management Plan (ESMP). Project design, construction planning, and future development activities will therefore be undertaken in a manner that seeks to avoid, minimize, and manage potential impacts on identified heritage assets.

According to information provided by RSMM management, the identified Object Suspected as Cultural Heritage (Objek Diduga Cagar Budaya – ODCB) building is proposed to be retained and adaptively reused as a facility for historical exhibition and dissemination of information related to the development and history of the hospital. This adaptive reuse approach is considered to be consistent with good international practice in cultural heritage management, as it supports the conservation of heritage values through continued use. It is expected to contribute to the preservation and enhancement of the cultural significance and historical identity of the RSMM complex, while ensuring that the functional transformation of the building is undertaken in a manner that is sensitive to its heritage characteristics.

The impact assessment identified that construction activities, particularly demolition of existing structures, excavation, piling works, heavy equipment operation, and increased construction traffic, may generate vibration and other indirect impacts that could affect the structural integrity and heritage value of the identified ODCB buildings. Accordingly, a Cultural Heritage Management Plan (CHMP) will be developed and implemented as part of the ESMP. The CHMP will establish procedures for the protection of identified heritage assets during construction and operation phases, including pre-construction condition surveys, photographic documentation, structural assessments, establishment of protection zones, regular visual inspections, vibration management and monitoring during demolition and piling activities, incident response procedures, and consultation with relevant authorities where required.

In addition, a Chance Find Procedure will be implemented to address any previously unknown archaeological materials, artifacts, or heritage resources that may be encountered during excavation activities. The Chance Find Procedure will complement, but not replace, the specific protection measures established under the CHMP for the identified ODCB buildings and associated heritage features.

Implementation of these measures is expected to avoid or minimize potential adverse impacts on cultural heritage resources while supporting the long-term preservation of the historical, architectural, and cultural significance of the RSMM complex.

### **5.3.6 Existing Tenant and Livelihood Condition within RSMM**

RSMM accommodates several commercial tenants that provide food, beverages, convenience goods, and rehabilitation-related services for patients, visitors, and hospital staff.

These tenants contribute to the hospital's supporting services while also providing livelihood opportunities for small businesses and workers.

To better understand the potential socio-economic implications of the proposed redevelopment, interviews were conducted with tenant representatives and cooperative management operating within the hospital complex. The assessment focused on existing business arrangements, operational conditions, livelihood dependence, and perceptions regarding the planned redevelopment.

### **Existing Tenant Profile**

The assessment identified three main categories of tenants operating within the hospital complex:

| <b>Tenant Category</b>                           | <b>Characteristics</b>                                                                                |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| <b>Cooperative-managed food stalls</b>           | Approximately 11 food tenants managed through the RSMM Cooperative.                                   |
| <b>Dharma Wanita-managed food outlets</b>        | Several canteens and cafés operated under Dharma Wanita management.                                   |
| <b>Independently operated commercial tenants</b> | Individual businesses operating under direct lease agreements with RSMM, including franchise outlets. |

Besides commercial tenants, RSMM also operates Kafe Kepompong, a social enterprise managed jointly by the hospital and the Cooperative as part of the psychosocial rehabilitation programme.

### **Kafe Kepompong as a Social Rehabilitation Initiative**

One unique feature identified during the baseline study is the operation of Kafe Kepompong, which serves not only as a commercial outlet but also as part of RSMM's psychosocial rehabilitation programme. The cafés are operated by former mental health patients (ODGJ) who have reached a productive stage of recovery and are considered ready to undertake supervised employment activities.

Currently, three Kafe Kepompong outlets operate within the hospital complex, located at:

- Integrated Rehabilitation Installation (IRP);
- TPP area;
- Integrated Psychiatry Clinic.

The programme provides income-generating opportunities while supporting social reintegration of mental health service users.

Because employment arrangements are intentionally flexible, workers may temporarily discontinue work whenever additional medical treatment or rehabilitation becomes necessary.

This programme represents an important social value of the hospital and should be considered during redevelopment planning to ensure continuity of rehabilitation services.

### Livelihood Dependence

Interviews indicate that many tenants rely heavily on daily hospital visitors, staff, and patients as their primary customer base. Estimated monthly revenues vary considerably depending on business type, including:

| Business Type    | Estimated Monthly Revenue                           |
|------------------|-----------------------------------------------------|
| Coffee shop      | IDR 10–15 million                                   |
| Food canteen     | Approximately IDR 4 million daily (cash sales only) |
| Franchise bakery | Approximately IDR 30 million                        |

These findings indicate that temporary disruption or relocation may directly affect tenant income if not appropriately managed.

### 5.3.7 Community Perceptions and Expectations toward the Project

A household survey involving 67 respondents was undertaken within the Project Area of Influence (AoI) to understand community awareness, perceptions, concerns, and expectations regarding the proposed development of dr. H. Marzoeki Mahdi Hospital (RSMM). The survey results provide important information regarding community acceptance of the Project and assist in identifying social issues that require consideration during project planning and implementation.

The sample size of 67 respondents was determined based on the total population of 6,097 households in Kelurahan Menteng, Kecamatan Bogor Barat, Kota Bogor. The sample size was calculated using the formula proposed by Lynch et al. (1972)<sup>1</sup>, applying a confidence level of 90% ( $Z = 1.645$ ), a maximum variability proportion of 0.50, and a margin of error of 10%. Based on these parameters, the minimum required sample size was 67 respondents.

#### 5.3.7.1 Community Awareness of the Project

The survey results indicate a high level of public awareness regarding the proposed development of RSMM. Approximately 96% of respondents stated that they were aware of the planned development activities, while only 4% indicated that they had not yet received information regarding the Project.

<sup>1</sup> Lynch et al. (1972) developed a sample size determination method for finite populations based on probability sampling theory. The approach estimates minimum sample requirements using population size, confidence level (Z-value), assumed proportion of variability (p), and margin of error (e). This method is widely applied in social research and ESIA studies to ensure statistical representativeness when conducting household surveys under resource and time constraints.

Information regarding the Project was primarily obtained through local government representatives, including RT/RW and Kelurahan officials (50%), followed by information shared among community members (41%). A smaller proportion of respondents received information directly from RSMM representatives (9%).

The findings indicate that information regarding the proposed development has generally reached surrounding communities. However, continuous stakeholder engagement and information disclosure will remain important throughout project implementation.



**Figure 5.26 Community Awareness of the Proposed Project**

### 5.3.7.2 Perceived Project Benefits

Community perception toward the proposed development is generally positive. Respondents identified several expected benefits associated with the Project, particularly in relation to employment opportunities and improvements in healthcare services.

More than half of respondents (54%) considered employment generation as the primary benefit of the Project. In addition, 25% of respondents anticipated both employment and business opportunities, while 19% expected improvements in the quality and accessibility of healthcare services.

These findings indicate that the Project is viewed as having the potential to generate socio-economic benefits for local communities while strengthening healthcare service provision in the surrounding area.



**Figure 5.27 Perceived Benefits of the Project**

### 5.3.7.3 Perceived Risks and Community Concerns

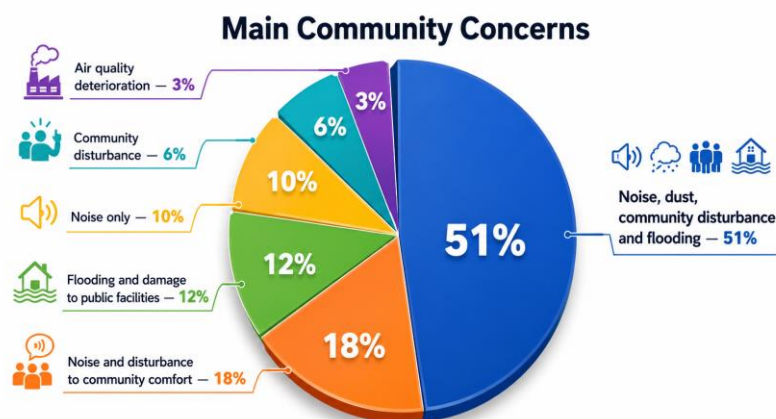
Although community support for the Project is high, respondents identified several concerns that may arise during construction and operational activities.

The most frequently mentioned concerns include:

- Construction noise;
- Dust generation and deterioration of air quality;
- Disturbance to community comfort and convenience;
- Traffic congestion;
- Localized flooding and drainage issues;
- Damage to public infrastructure and utilities.

Many respondents indicated that these concerns are based on experiences associated with previous construction and development activities within or around the RSMM area.

The findings highlight the importance of implementing appropriate environmental and social management measures to minimize nuisance impacts on surrounding communities.



**Figure 5.28 Community Concerns Related to Project Development**

#### 5.3.7.4 Community Support for the Project

Overall community acceptance of the Project is very high. All surveyed respondents expressed support for the proposed development of RSMM.

This positive perception reflects recognition of the hospital's important role in providing healthcare services and expectations that the Project will contribute to local economic development and improved public services.



**Figure 5.29 Community Support for the Project**

The survey results indicate that community support is conditional upon effective management of environmental impacts and ongoing communication between the Project and surrounding communities.

#### 5.3.7.5 Grievance Mechanism Awareness and Accessibility

The survey results suggest that existing communication channels between communities and RSMM could be further strengthened.

Approximately 46% of respondents reported that they did not know how to submit complaints or concerns to RSMM. Among respondents who were aware of available channels, the most common approach was through local RT/RW representatives (45%).

In addition, 93% of respondents indicated that a more accessible and transparent grievance mechanism would be beneficial during project implementation.

These findings demonstrate the importance of establishing and maintaining a Project-level Grievance Redress Mechanism (GRM) that is easily accessible, responsive, and well communicated to surrounding communities.

#### 5.3.7.6 Community Expectations

Respondents expressed several expectations regarding the proposed development of RSMM. The most common expectations include:

Effective management of environmental impacts such as noise, dust, traffic congestion, and flooding;

- Prioritization of local employment opportunities where feasible;
- Improved communication and information disclosure throughout project implementation;
- Provision of accessible and responsive grievance mechanisms;
- Maintenance of community safety, security, and comfort;
- Improvement of healthcare services for local residents;
- Preservation of historical and cultural values associated with the RSMM complex.

Overall, the survey findings indicate that the surrounding community is supportive of the Project and recognizes its potential benefits. However, community support is closely linked to the Project's ability to manage environmental and social impacts effectively, maintain transparent communication, and respond promptly to community concerns.

## 6 SCREENING AND SCOPING RESULT

### 6.1 Project Categorization

The Asian Infrastructure Investment Bank (AIIB) categorises its projects into three categories based on the environmental and social impacts they may have:

- Category A: Projects with significant, irreversible, and unprecedented adverse environmental and social impacts. These projects require an environmental and social management plan (ESMP) and an ESIA.
- Category B: Projects with a limited number of potentially adverse environmental and social impacts. These projects require an initial review of environmental and social risks and impacts, and an appropriate environmental and social instrument.
- Category C: Projects with minimal or no adverse environmental and social impacts. These projects do not require an ESIA, but an analysis of their environmental and social aspects is required.

Based on the preliminary scoping assessment and the nature of the proposed development, the Project is likely to be classified as a Category B Project under the AIIB Environmental and Social Framework (ESF). This preliminary categorization is based on the understanding that the Project involves the expansion and modernization of an existing hospital facility within an established institutional area, with environmental and social impacts that are generally site-specific, reversible, and manageable through the implementation of appropriate mitigation measures.

The Project mainly consists of the development of new healthcare buildings, supporting facilities, medical equipment procurement, IT system development, and supporting infrastructure within the existing RS Marzoeqi Mahdi hospital complex in Bogor, West Java. The development area is located within the existing 387,419 m<sup>2</sup> hospital land owned by the institution, thereby minimizing the need for land acquisition and involuntary resettlement. In addition, the Readiness Criteria document indicates that no physical displacement or resettlement is currently anticipated as part of the Project implementation. However, based on site survey, there are a number of tenants in the hospital area which may experienced displacement due to relocation, which have been considered in this ESIA document.

Potential environmental and social impacts are expected to primarily occur during the construction and operational phases, including construction noise and dust, traffic disturbances, occupational health and safety (OHS) risks, healthcare waste generation, increased utility demand, and temporary disruption to surrounding communities and ongoing hospital activities. During operation, the Project may also generate risks associated with

medical waste management, wastewater treatment, infection prevention and control, community health and safety, and emergency preparedness. However, these impacts are expected to be localized, manageable, and mitigable through the implementation of an Environmental and Social Management Plan (ESMP), adherence to Indonesian regulations, and compliance with the AIIB ESF and applicable Environmental, Health, and Safety (EHS) Guidelines.

The Project does not involve activities with significant irreversible adverse impacts, large-scale land conversion, critical habitat degradation, or major displacement of communities. The surrounding area is predominantly characterized by existing urban development and institutional land use, including residential areas and public facilities. Therefore, the Project is not expected to cause significant cumulative or unprecedented environmental and social risks.

## 6.2 Identification of Legacy Issues

Stakeholder consultations undertaken during the ESIA process identified several legacy issues associated with previous development activities within and around the RSMM area. Although these issues are not directly attributable to the proposed Project, they influence stakeholder perceptions and may affect the Project's social license to operate. Complete information on stakeholder activity that has been conducted is available in ANNEX E – Record of Public Consultation Meeting.

**Table 6.1. List of Legacy Issues**

| Legacy Issue                               | Description                                                                                                                             |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Drainage and Surface Runoff</b>         | : Local communities reported previous flooding, ponding, and runoff issues associated with nearby development activities.               |
| <b>Road Cleanliness and Mud Deposition</b> | : Construction vehicle movements reportedly caused mud and soil deposition on public roads, creating inconvenience and safety concerns. |
| <b>Traffic Safety</b>                      | : Increased construction traffic from previous projects raised concerns regarding pedestrian and road user safety.                      |
| <b>Utility Disruptions</b>                 | : Communities reported temporary disruptions to water supply services during earlier construction activities.                           |
| <b>Stakeholder Communication</b>           | : Communities expressed the need for improved communication, advance notification, and accessible grievance mechanisms.                 |
| <b>Cultural Heritage Concerns</b>          | : Concerns were raised regarding the protection of historical buildings and landscape elements located within the RSMM complex.         |

These legacy issues have been considered during scoping process and have informed the identification of environmental and social risk and impact for further assessment.

### 6.3 Sensitive Receptors

Sensitive receptors were identified through baseline studies, field observations, stakeholder engagement activities, and consultations with relevant government institutions.

The main sensitive receptors within the Project Area of Influence are presented in Table.

| Receptor Category                  | Description                                                                                                                          |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| <b>Residential Communities</b>     | Residents of RW 01, RW 11, RW 15, RW 16, RW 17, RW 18, and RW 20 located adjacent to the Project site.                               |
| <b>Vulnerable Groups</b>           | Elderly persons, women, children, persons with disabilities, and hospital patients.                                                  |
| <b>Public Facilities</b>           | Schools, places of worship, health facilities, and community facilities located near the Project area.                               |
| <b>Road Users</b>                  | Users of Jalan dr. Semeru and surrounding local roads.                                                                               |
| <b>Biodiversity Receptors</b>      | Urban vegetation, landscaped areas, and urban wildlife within and around the hospital complex.                                       |
| <b>Workers</b>                     | Construction workers, contractors, and hospital personnel.                                                                           |
| <b>Cultural Heritage Receptors</b> | Historical buildings, architectural features, landscape elements, and areas identified as Potential Cultural Heritage Assets (ODCB). |

### 6.4 Sub-Project Area of Influence

The Project Area of Influence (Aoi) includes both direct and indirect impact areas associated with Project activities.

#### Direct Area of Influence

- The Direct Area of Influence includes:
- The RSMM hospital complex;
- Proposed development footprints;
- Construction work areas; 0
- Material storage areas;
- Internal access roads and supporting infrastructure.

#### Indirect Area of Influence

- The Indirect Area of Influence includes:
- Surrounding residential areas;
- Jalan dr. Semeru and connected transportation corridors;
- Public facilities located near the Project site;
- Ecological receptors potentially affected by Project activities;
- Historical and cultural assets associated with the RSMM complex.

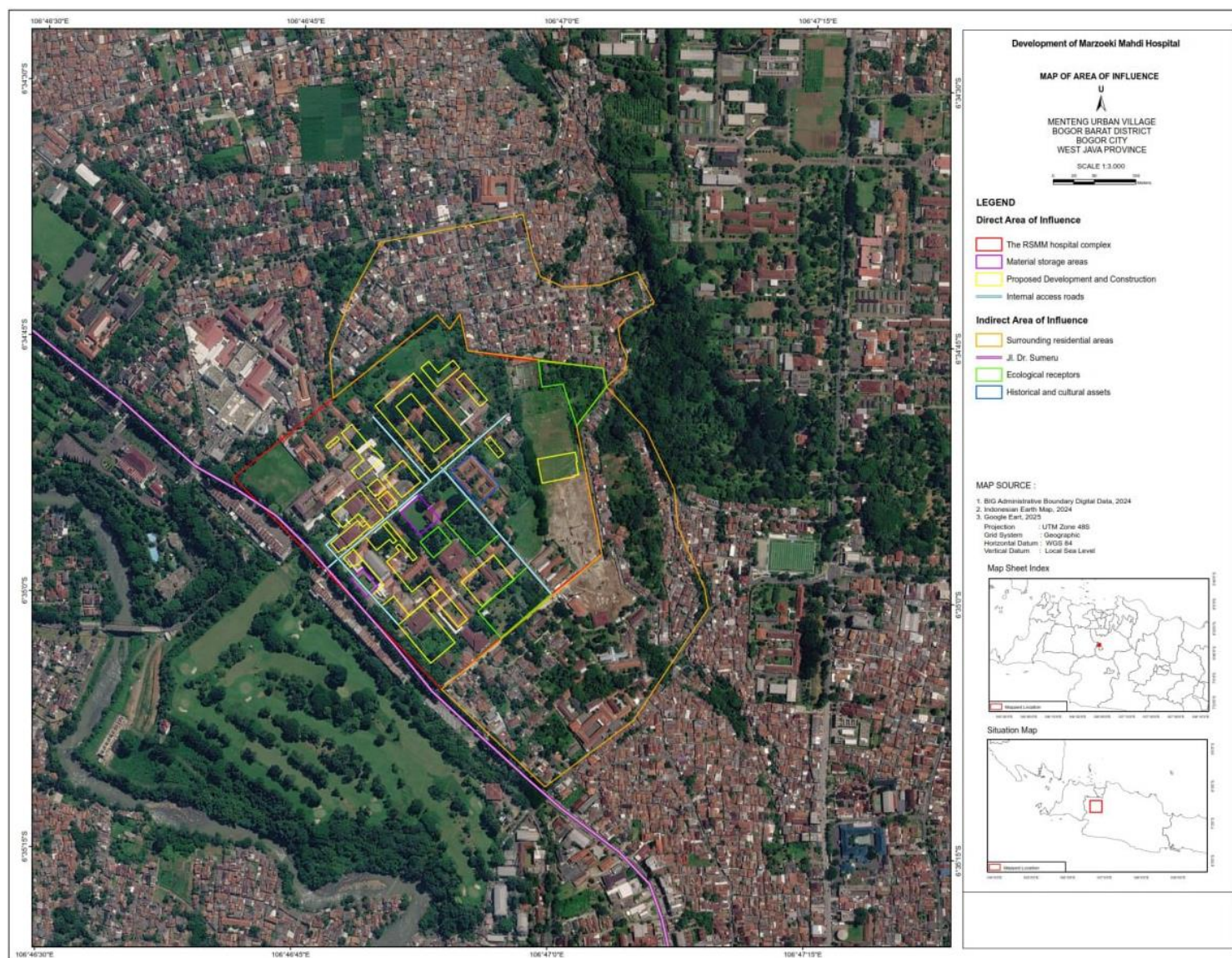


Figure 6.1. Area of Impact (Aol) Map of Dr. H. Marzoeki Mahdi Development Project

## 6.5 Risk and Impact Identification

Environmental and social risks and impacts were identified through:

- Review of Project information and design documents;
- Environmental and social baseline studies;
- Field observations;
- Stakeholder engagement activities;
- Consultations with government agencies;
- Professional judgement based on international good practice.

The screening and scoping process identified the following key environmental and social topics requiring detailed assessment:

### Environmental Topics

- Air quality and dust emissions;
- Noise and vibration;
- Surface water management and drainage;
- Waste management;
- Hazardous materials management;
- Traffic and transportation;
- Occupational Health and Safety (OHS);
- Community Health and Safety (CHS);
- Biodiversity and urban ecology.

### Social Topics

- Employment and economic opportunities;
- Community disturbance;
- Access and mobility;
- Stakeholder engagement;
- Vulnerable groups;
- Grievance management;
- Labour and working conditions.

### Cultural Heritage

Consultations with the Bogor City Tourism and Culture Office indicated the presence of several historical buildings and landscape elements within the RSMM complex that may possess cultural heritage value.

Several buildings and landscape elements within the RSMM complex have been identified as Potential Cultural Heritage Assets (*Objek Diduga Cagar Budaya/ODCB*). Although these assets have not yet been formally designated as Cultural Heritage under Law No. 11 of 2010 concerning Cultural Heritage, they are subject to preliminary protection and further assessment due to their historical significance and colonial-era architectural characteristics.

At the time of the ESIA preparation, discussions regarding the status and management of these assets were ongoing between RSMM, the Tourism and Culture Office, the Cultural Heritage Expert Team (TACB), and other relevant authorities.

Consistent with the precautionary approach adopted under international good practice, including AIIB ESF and principles aligned with IFC Performance Standard 8 on Cultural Heritage, all identified ODCB assets are treated as sensitive cultural heritage receptors until a formal determination is issued by the competent authority.

## 7 IDENTIFICATION AND ASSESSMENT OF ENVIRONMENTAL AND SOCIAL RISKS AND IMPACTS

### 7.1 Methodology for Impact Identification and Significance Assessment

The identification of potential environmental and social impacts was conducted using a simple interaction matrix approach, which enables the systematic evaluation of cause-and-effect relationships between project activities and environmental and social receptors. This method facilitates the identification of potential impacts that may arise during the pre-construction, construction, operation, and decommissioning phases of the Project.

The impact identification process was informed by several sources of information, including discussions with the Project Proponent to obtain a detailed understanding of project activities and technical characteristics, review of relevant literature and regulatory requirements, field observations, and baseline environmental and social studies undertaken within the Area of Influence (AoI). Information obtained through stakeholder engagement activities, including consultations and discussions with affected communities and relevant stakeholders, was also incorporated to ensure that local concerns, expectations, and site-specific conditions were adequately considered.

Following the identification process, each potential impact was assessed to determine its significance by considering a combination of impact characteristics and receptor sensitivity. The assessment was undertaken using professional judgment supported by available baseline data and stakeholder input. The following criteria were considered:

#### Impact Likelihood

The probability that a specific impact will occur as a result of Project activities. For the purposes of this assessment, impacts are classified as either:

- ❖ **Likely:** The impact is expected to occur under normal project conditions.
- ❖ **Unlikely:** The impact is not expected to occur or would only occur under exceptional or abnormal circumstances.

#### Impact Scope

The relationship between the impact and Project activities, categorized as:

- ❖ **Direct Impact:** An impact occurring as an immediate consequence of Project activities.
- ❖ **Indirect Impact:** An impact resulting from Project activities but occurring subsequently in time or at a different location.

## Spatial Scale

The geographical extent of the impact, categorized as:

- ❖ **Site-Specific (Local):** Limited to the Project site or immediate area of activity.
- ❖ **Off-Site:** Extending beyond the Project boundary and potentially affecting surrounding communities, ecosystems, or infrastructure.

## Impact Magnitude

The degree of change caused by the impact, considering factors such as intensity, duration, reversibility, and the number of receptors affected:

- ❖ **Low:** Small-scale, short-term, and readily reversible impacts with limited consequences.
- ❖ **Medium:** Impacts of medium intensity and duration that may affect multiple receptors and may require mitigation measures.
- ❖ **High:** Severe, large-scale, long-term, or irreversible impacts resulting in substantial environmental or social consequences.

## Receptor Sensitivity

The vulnerability, resilience, or adaptive capacity of environmental and social receptors that may be affected by the Project. Receptors with higher sensitivity are more susceptible to adverse impacts and may experience greater consequences from a given level of impact magnitude.

The significance of each identified impact was determined through the evaluation of impact magnitude in combination with receptor sensitivity, taking into account the likelihood, scope, and spatial scale of the impact. This approach provides a structured basis for identifying key environmental and social risks and for developing appropriate mitigation and management measures in accordance with international good practice and applicable lender requirements.

## 7.2 Scoping and Summary of Anticipated Impacts

Based on the project description, environmental and social baseline studies, field observations, stakeholder consultations, and applicable national regulations and international standards, a range of environmental and social (E&S) risks and impacts have been identified for the proposed development of Dr. H. Marzoeqi Mahdi Hospital (RSMM).

The assessment covers all phases of the Project, including pre-construction, construction, operation, and post-operation. Potential impacts have been identified for environmental

quality, biodiversity, occupational health and safety, community health and safety, traffic and transportation, socio-economic conditions, stakeholder engagement, and cultural heritage.

Based on consultations with the Bogor City Tourism and Culture Office, several buildings and landscape elements have been identified as Objects Suspected as Cultural Heritage (*Objek Diduga Cagar Budaya/ODCB*). Although these assets have not yet been formally designated as Cultural Heritage under Law No. 11 of 2010 concerning Cultural Heritage, they are subject to preliminary protection and further assessment due to their historical significance and architectural characteristics. Accordingly, potential impacts on cultural heritage have been integrated into the assessment of project activities throughout the Project lifecycle.

### **7.3 Environmental and Social Impact Assessment During Pre-Construction Stage**

The pre-construction phase includes project planning, detailed engineering design, environmental and social studies, stakeholder engagement activities, permitting processes, and preparation for construction works. While physical environmental disturbances are generally limited during this phase, several environmental and social risks may arise, particularly those related to stakeholder expectations, inclusion of vulnerable groups, occupational health and safety during surveys, and the integration of environmental, social, and cultural heritage considerations into project planning and design.

The environmental and social risks and impacts identified during the pre-construction phase are presented in Table 7.1.

**Table 7.1. Environmental and Social Risks and Impact During Pre-Construction Stage**

| <b>E&amp;S Risks and Impacts</b>                                           | <b>Project Activities that Cause Risks/Impacts</b> | <b>Nature &amp; Duration of Risks/Impacts</b>                                                                                                                                                                              | <b>Impact Likelihood</b> | <b>Impact Scope</b> | <b>Spatial Scale</b> | <b>Impact Magnitude</b> | <b>Receptors</b>                                                         |
|----------------------------------------------------------------------------|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------|----------------------|-------------------------|--------------------------------------------------------------------------|
| <b>Community concerns and misinformation regarding project development</b> | Planning and permitting                            | Community concerns may arise due to limited understanding of project scope, construction activities, and future hospital operations. Short- to medium-term impact.                                                         | Likely                   | Direct              | Off-Site             | Medium                  | Nearby residents, RW representatives, community leaders                  |
| <b>Exclusion of vulnerable groups from consultation process</b>            | Planning and permitting                            | Vulnerable groups may not be adequately represented during consultation activities, potentially limiting their access to project information and participation in decision-making. Temporary impact during planning stage. | Unlikely                 | Direct              | Off-Site             | Low                     | Women, elderly persons, persons with disabilities, low-income households |

| E&S Risks and Impacts                                                         | Project Activities that Cause Risks/Impacts | Nature & Duration of Risks/Impacts                                                                                                                                                                                                                | Impact Likelihood | Impact Scope | Spatial Scale | Impact Magnitude | Receptors                                              |
|-------------------------------------------------------------------------------|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------|---------------|------------------|--------------------------------------------------------|
| <b>Occupational health and safety risks during surveys and investigations</b> | Planning and permitting                     | Potential minor accidents and injuries during field investigations. Temporary impact limited to survey period                                                                                                                                     | Unlikely          | Direct       | Local         | Medium           | Survey personnel, contractors                          |
| <b>Inadequate consideration of Cultural Heritage values in project design</b> | Planning and permitting                     | Potential impacts on Objects Suspected as Cultural Heritage ( <i>Objek Diduga Cagar Budaya/ODCB</i> ) values if heritage considerations are not integrated into project planning and design. Impact could be long-term or permanent if unmanaged. | Unlikely          | Direct       | Local         | Medium           | ODCB elements, heritage authorities, local communities |
| <b>Inadequate consideration of protected flora in project design</b>          | Planning and permitting                     | The presence of protected flora on hospital grounds, which may be disrupted during construction if                                                                                                                                                | Unlikely          | Direct       | Local         | Low              | Protected flora species (Teak and Mahogany)            |

| E&S Risks and Impacts | Project Activities that Cause Risks/Impacts | Nature & Duration of Risks/Impacts | Impact Likelihood | Impact Scope | Spatial Scale | Impact Magnitude | Receptors |
|-----------------------|---------------------------------------------|------------------------------------|-------------------|--------------|---------------|------------------|-----------|
|                       |                                             | not accounted for in the design    |                   |              |               |                  |           |

#### **7.4 Environmental and Social Impact Assessment During Construction Stage**

The construction phase is expected to generate the most significant environmental and social impacts due to demolition works, site preparation, excavation, transportation of materials, workforce mobilization, and operation of heavy equipment. As construction activities will occur within an active hospital environment and adjacent to residential areas, effective environmental and social management measures will be required to minimize impacts on patients, hospital personnel, visitors, and surrounding communities.

The environmental and social risks and impacts identified during the construction phase are presented in Table 7.2.

**Table 7.2. Environmental and Social Risks and Impacts During Construction Stage**

| <b>E&amp;S Risks and Impacts</b>                                    | <b>Project Activities that Cause Risks/Impacts</b>                                                                                                                                     | <b>Nature &amp; Duration of Risks/Impacts</b>                                                                      | <b>Impact Likelihood</b> | <b>Impact Scope</b> | <b>Spatial Scale</b> | <b>Impact Magnitude</b> | <b>Receptors</b>                              |
|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------|----------------------|-------------------------|-----------------------------------------------|
| <b>Dust emissions and deterioration of ambient air quality</b>      | Mobilization of construction tools and material, Demolition of existing buildings, Disposal of demolition debris, Land preparation, and Construction of main and supporting facilities | Dust may be generated throughout construction, particularly during dry conditions. Temporary.                      | Likely                   | Direct              | Off-Site             | Medium                  | Residents, patients, visitors, hospital staff |
| <b>Noise and vibration disturbance</b>                              | Mobilization of construction tools and material, Demolition of existing buildings, Disposal of demolition debris, Land preparation, and Construction of main and supporting facilities | Noise and vibration may affect surrounding communities and hospital activities throughout construction. Temporary. | Likely                   | Direct              | Off-Site             | Medium                  | Residents, patients, visitors, hospital staff |
| <b>Increased runoff, sedimentation, and localized flooding risk</b> | Land preparation                                                                                                                                                                       | Soil disturbance may increase runoff and sediment transport during rainfall events. Temporary.                     | Likely                   | Direct              | Off-Site             | Medium                  | Nearby communities, drainage systems          |
| <b>Construction waste generation</b>                                | Demolition of existing buildings and Construction of main and supporting facilities                                                                                                    | Generation of construction debris and non-hazardous waste throughout construction activities. Temporary.           | Likely                   | Direct              | Local                | Medium                  | Patients, hospital staff, waste handlers      |
| <b>Hazardous waste generation</b>                                   | Demolition of existing buildings and Construction of main and supporting facilities                                                                                                    | Dispersion of asbestos, generation of used oil, contaminated materials, and other hazardous waste. Temporary.      | Likely                   | Direct              | Local                | Medium                  | Patients, hospital staff, worker              |
| <b>Asbestos-containing material (ACM) exposure</b>                  | Demolition of existing buildings                                                                                                                                                       | Initial identification found corrugated asbestos roof, which categorized as                                        | Unlikely                 | Direct              | Local                | High                    | Construction workers,                         |

| E&S Risks and Impacts                           | Project Activities that Cause Risks/Impacts                                                                                                                                            | Nature & Duration of Risks/Impacts                                                                                                                                                                                                          | Impact Likelihood | Impact Scope | Spatial Scale | Impact Magnitude | Receptors                                     |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------|---------------|------------------|-----------------------------------------------|
|                                                 |                                                                                                                                                                                        | non-friable asbestos-containing material. Non-friable asbestos-containing materials do not easily release into the air unless broken, cut, drilled, or weathered heavily. Release of ACM may happen temporary during demolition activities. |                   |              |               |                  | hospital staff, patients                      |
| <b>Disturbance to flora and fauna</b>           | Land preparation and Construction of main and supporting facilities                                                                                                                    | Increased human activity may disturb common urban biodiversity. Temporary and localized.                                                                                                                                                    | Unlikely          | Direct       | Local         | Low              | Urban wildlife species                        |
| <b>Traffic congestion and road safety risks</b> | Mobilization of construction tools and material                                                                                                                                        | Increased vehicle movement may increase traffic congestion and accident risks. Temporary.                                                                                                                                                   | Likely            | Direct       | Off-Site      | High             | Road users, pedestrians, nearby communities   |
| <b>Community health and safety risks</b>        | Mobilization of construction tools and material, Demolition of existing buildings, Disposal of demolition debris, Land preparation, and Construction of main and supporting facilities | Exposure to dust, noise, traffic hazards, and construction activities. Temporary.                                                                                                                                                           | Likely            | Direct       | Off-Site      | Medium           | Patients, visitors, hospital staff, residents |
| <b>Occupational health and safety risks</b>     | Demolition of existing buildings, Land preparation, and Construction of main and supporting facilities                                                                                 | Construction workers may be exposed to occupational hazards associated with demolition, excavation, work at height, scaffolding, electrical works, hot work, confined                                                                       | Unlikely          | Direct       | Local         | Medium to High   | Construction workers, contractors             |

| E&S Risks and Impacts                                               | Project Activities that Cause Risks/Impacts                                         | Nature & Duration of Risks/Impacts                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Impact Likelihood | Impact Scope | Spatial Scale | Impact Magnitude  | Receptors                                                             |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------|---------------|-------------------|-----------------------------------------------------------------------|
|                                                                     |                                                                                     | <p>space entry, lifting operations, heavy equipment, hazardous materials, and excessive noise and dust. These temporary construction-phase risks may result in serious injury or fatality if not adequately controlled.</p> <p>Besides OHS risks, the Project may also generate labor and working condition risks related to contractor management, compliance with labor legislation, fair employment practices, working hours, worker welfare, discrimination and equal opportunity, worker grievance mechanisms, psychosocial stress, and potential GBV/SEA-SH incidents.</p> |                   |              |               |                   |                                                                       |
| <b>Local employment and business opportunities</b>                  | Construction labor recruitment                                                      | Increased employment and local business opportunities during construction. Temporary positive impact.                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Likely            | Direct       | Off-Site      | Medium (Positive) | Local workforce, SMEs/UMKM, local vendors                             |
| <b>Physical damage to potential Cultural Heritage assets (ODCB)</b> | Demolition of existing buildings and Construction of main and supporting facilities | Historical buildings and architectural elements may be altered, damaged, or removed. Potentially permanent.                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Unlikely          | Direct       | Local         | Low               | ODCB buildings, heritage features, local communities, TACB, Disparbud |

| <b>E&amp;S Risks and Impacts</b>                                                                                                      | <b>Project Activities that Cause Risks/Impacts</b>                                                                                | <b>Nature &amp; Duration of Risks/Impacts</b>                                                                                                                                                             | <b>Impact Likelihood</b> | <b>Impact Scope</b> | <b>Spatial Scale</b> | <b>Impact Magnitude</b> | <b>Receptors</b>                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------|----------------------|-------------------------|------------------------------------------------------------------------------|
| <b>Alteration of historical architectural character</b>                                                                               | Construction of main and supporting facilities                                                                                    | Changes to the visual integrity and historical character of heritage structures. Long-term.                                                                                                               | Unlikely                 | Direct              | Local                | Low                     | Heritage buildings, local communities, cultural authorities                  |
| <b>Chance discovery of undocumented heritage features</b>                                                                             | Demolition of existing buildings and Land preparation                                                                             | Previously undocumented cultural materials or structures may be discovered during excavation. Temporary but potentially significant.                                                                      | Unlikely                 | Direct              | Local                | Low                     | Cultural heritage resources, project proponent, authorities                  |
| <b>Risks associated with relocation of hospital services, patient movement, and continued hospital operations during construction</b> | Phased demolition, relocation of hospital services, movement of patients, medical equipment, and staff within the active hospital | Temporary adverse impact during phased construction and relocation activities                                                                                                                             | Unlikely                 | Direct              | Local                | Medium                  | Patients, visitors, healthcare workers, hospital staff                       |
| <b>Disruption to critical hospital utility services and environmental infrastructure</b>                                              | Demolition, utility relocation, excavation, tie-in works, and construction activities near existing utility networks              | Temporary adverse impact during construction                                                                                                                                                              | Unlikely                 | Direct              | Local                | Medium                  | Patients, hospital staff, visitors, healthcare services, hospital facilities |
| <b>Risk of GBV, SEA/SH, and inappropriate interaction between construction workers and vulnerable</b>                                 | Establishment and operation of workers' basecamp and laydown area within the hospital compound                                    | The presence of predominantly male construction workers residing within the hospital compound may increase the risk of inappropriate interactions, sexual exploitation and abuse (SEA), sexual harassment | Likely                   | Direct              | Local                | Local                   | Psychiatric inpatients, female patients, visitors, female staff, caregivers  |

| E&S Risks and Impacts                                 | Project Activities that Cause Risks/Impacts                                         | Nature & Duration of Risks/Impacts                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Impact Likelihood | Impact Scope | Spatial Scale | Impact Magnitude | Receptors                                                                                                                                             |
|-------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------|---------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| psychiatric patients                                  |                                                                                     | (SH), or other forms of misconduct involving vulnerable psychiatric patients who may have limited capacity to provide informed consent or report incidents. The impact is temporary and limited to the construction period but requires stringent preventive measures.                                                                                                                                                                                                                                      |                   |              |               |                  |                                                                                                                                                       |
| Temporary economic displacement of commercial tenants | Demolition of existing buildings and Construction of main and supporting facilities | Construction activities may require the temporary relocation of commercial tenants operating within the RSMM hospital compound. This may result in temporary interruption of business operations, reduced customer access, and short-term loss of income until suitable temporary facilities are available or permanent facilities are reinstated. The impact is temporary during the construction period and is expected to be reversible with appropriate relocation and livelihood restoration measures. | Likely            | Direct       | Local         | Medium           | Commercial tenants (canteen, cooperative, cafés, Kafe Kepompong), tenant employees, hospital staff, patients, and visitors relying on these services. |

## **7.5 Environmental and Social Impact Assessment During Operation Stage**

The operation phase will commence once the expanded hospital facilities become fully operational. The Project is expected to generate significant positive impacts through improved healthcare services, increased treatment capacity, expanded educational functions, and additional employment opportunities. However, operational activities may also generate environmental and social impacts associated with healthcare waste management, wastewater generation, utility consumption, traffic, occupational health and safety, and community health and safety.

The environmental and social risks and impacts identified during the operation phase are presented in Table 7.3.

**Table 7.3. Environmental and social Risks and Impacts During Operations Stage**

| <b>E&amp;S Risks and Impacts</b>                      | <b>Project Activities that Cause Risks/Impacts</b>                                                          | <b>Nature &amp; Duration of Risks/Impacts</b>                                                                               | <b>Impact Likelihood</b> | <b>Impact Scope</b> | <b>Spatial Scale</b> | <b>Impact Magnitude</b> | <b>Receptors</b>                                |
|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------|----------------------|-------------------------|-------------------------------------------------|
| <b>Improved healthcare access and service quality</b> | Hospital operation and maintenance                                                                          | Increased service capacity and improved healthcare access. Long-term positive impact.                                       | Likely                   | Direct              | Off-Site             | Medium (Positive)       | Patients, surrounding communities               |
| <b>Increased employment opportunities</b>             | Operational labor recruitment                                                                               | Creation of additional medical and non-medical jobs. Long-term positive impact.                                             | Likely                   | Direct              | Off-Site             | Medium (Positive)       | Local workforce                                 |
| <b>Healthcare waste generation</b>                    | Hospital operation and maintenance                                                                          | Continuous generation of infectious and hazardous healthcare waste. Long-term.                                              | Likely                   | Direct              | Local                | Medium                  | Workers, waste handlers                         |
| <b>Radiation exposure</b>                             | Hospital operation and maintenance (Use of medical equipment with radiation properties, e.g. X-Ray Machine) | Use of medical equipments with radiation exposure potential may cause health problems if exposure is not managed. Long-term | Likely                   | Indirect            | Local                | Low                     | Patients, Patients attendants, Hospital Workers |
| <b>Wastewater generation</b>                          | Hospital operation and maintenance                                                                          | Increased wastewater requiring treatment prior to discharge. Long-term.                                                     | Likely                   | Direct              | Local                | Low                     | Green open space                                |
| <b>Increased traffic volume</b>                       | Hospital operation and maintenance                                                                          | Increased traffic movement around                                                                                           | Likely                   | Direct              | Off-Site             | High                    | Road users, nearby communities                  |

| E&S Risks and Impacts                       | Project Activities that Cause Risks/Impacts | Nature & Duration of Risks/Impacts                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Impact Likelihood | Impact Scope | Spatial Scale | Impact Magnitude | Receptors                                             |
|---------------------------------------------|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------|---------------|------------------|-------------------------------------------------------|
|                                             |                                             | hospital access roads. Long-term.                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                   |              |               |                  |                                                       |
| <b>Occupational health and safety risks</b> | Hospital operation and maintenance          | Healthcare workers may be exposed to biological, chemical, ergonomic, physical, and psychosocial hazards, including potential violence or aggressive behaviour from patients with mental disorders, patients experiencing behavioural crises, or patients with substance use disorders. Risks may also arise from handling hazardous healthcare waste, infectious materials, medical equipment, and emergency response activities. These are long-term operational risks requiring continuous management. | Unlikely          | Direct       | Local         | Medium           | Healthcare workers, security personnel, support staff |
| <b>Community health and safety risks</b>    | Hospital operation and maintenance          | Potential impacts associated with emergency events, waste transportation,                                                                                                                                                                                                                                                                                                                                                                                                                                 | Unlikely          | Direct       | Off-Site      | Low              | Communities, visitors                                 |

| E&S Risks and Impacts                                                                                           | Project Activities that Cause Risks/Impacts | Nature & Duration of Risks/Impacts                                                                                                                                                                                                                                                                                                         | Impact Likelihood | Impact Scope | Spatial Scale | Impact Magnitude | Receptors                                                                                      |
|-----------------------------------------------------------------------------------------------------------------|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------|---------------|------------------|------------------------------------------------------------------------------------------------|
|                                                                                                                 |                                             | and public access. Long-term.                                                                                                                                                                                                                                                                                                              |                   |              |               |                  |                                                                                                |
| <b>Risk of exclusion or unequal access for vulnerable patients, including patients with mental disabilities</b> | Hospital operation and maintenance          | Temporary or long-term barriers to accessing healthcare services may arise if operational procedures, wayfinding, communication methods, or facility arrangements do not adequately accommodate the needs of vulnerable patients, including persons with mental disabilities, elderly patients, persons with disabilities, and caregivers. | Unlikely          | Direct       | Local         | Medium           | Patients with mental disabilities, persons with disabilities, elderly patients, caregivers     |
| <b>Increased consumption of water and energy resources</b>                                                      | Hospital operation and maintenance          | Increased demand for utility services and natural resources. Long-term.                                                                                                                                                                                                                                                                    | Likely            | Direct       | Local         | Low              | Utility providers, environment                                                                 |
| <b>Preservation and promotion of cultural heritage values</b>                                                   | Hospital operation and maintenance          | Positive long-term impact through the preservation, interpretation and public dissemination of historical significance of                                                                                                                                                                                                                  | Likely            | Direct       | Local         | Medium           | Local communities, hospital visitors, cultural heritage stakeholders, educational institutions |

| E&S Risks and Impacts | Project Activities that Cause Risks/Impacts | Nature & Duration of Risks/Impacts | Impact Likelihood | Impact Scope | Spatial Scale | Impact Magnitude | Receptors |
|-----------------------|---------------------------------------------|------------------------------------|-------------------|--------------|---------------|------------------|-----------|
|                       |                                             | RSMM and heritage asset            |                   |              |               |                  |           |

## 7.6 Summary of Environmental and Social Impacts

The environmental and social impact assessment identified a range of potential impacts associated with the pre-construction, construction, operation, and post-operation phases of the Project. The construction phase presents the greatest potential for adverse impacts due to the intensity of construction activities undertaken within an operational hospital environment. Key impacts include air emissions, noise and vibration, traffic disruption, occupational and community health and safety risks, temporary disruption of hospital services, protection of cultural heritage assets, temporary economic displacement of commercial tenants, and safeguarding risks associated with vulnerable psychiatric patients, including gender-based violence (GBV), sexual exploitation and abuse (SEA), and sexual harassment (SH).

To address these impacts, the Project has developed a comprehensive Environmental and Social Management Plan (ESMP) incorporating Good International Industry Practice (GIIP) and applicable Indonesian regulatory requirements. The ESMP includes specialized management plans covering occupational health and safety, traffic management, healthcare waste management, cultural heritage management, labour management, stakeholder engagement, commercial tenant relocation and livelihood restoration plan, infection prevention and control, and safeguarding measures addressing GBV/SEA/SH risks.

The cumulative impact assessment considered the potential interaction between the Project and existing or reasonably foreseeable developments within the Area of Influence (AoI), including ongoing hospital operations, surrounding residential and commercial activities, existing traffic along Jalan Dr. Sumeru and the surrounding road network, public utility services, and routine maintenance activities within the RSMM hospital complex. As the Project involves the redevelopment and expansion of an existing hospital rather than a greenfield development, cumulative impacts are expected to arise primarily from the overlap between construction activities and the continued operation of the hospital.

Overall, cumulative environmental and social impacts are expected to remain limited, localized, and manageable through effective implementation of the Environmental and Social Management Plan (ESMP). Cumulative impacts on air quality, noise and vibration, waste generation, occupational health and safety, community health and safety, cultural heritage, commercial activities, and utility services are anticipated to remain at **Low** residual significance following implementation of the proposed mitigation measures. Traffic conditions represent the principal cumulative impact expected to remain at **Medium** residual significance due to the combined influence of construction traffic, existing hospital operations, and urban traffic within the surrounding road network. Continued implementation of the Traffic

Management Plan, together with coordination with the Bogor City Transportation Agency, hospital management, and local authorities, will ensure that cumulative traffic impacts remain within acceptable levels.

The operation phase is expected to generate substantial long-term positive benefits through improved healthcare infrastructure, increased treatment capacity, enhanced access to mental health services, employment generation, and preservation of identified cultural heritage assets through adaptive reuse. These positive cumulative outcomes are expected to contribute to improved healthcare accessibility and public health services in Bogor City and the surrounding region.

Particular attention should be given to potential Cultural Heritage assets identified within the RSMM complex. Continued coordination with the Bogor City Tourism and Culture Office, the Cultural Heritage Expert Team (TACB), and other relevant stakeholders will be necessary to ensure that the historical and cultural values of identified ODCB elements are appropriately considered and protected throughout Project implementation.

Residual risks related to GBV/SEA/SH, patient privacy, the protection of vulnerable psychiatric patients, and temporary disruption of commercial tenant activities are expected to remain **Low**, provided that the Worker Code of Conduct, safeguarding training, restricted access controls, Commercial Tenant Relocation and Livelihood Restoration Plan, GBV-sensitive grievance mechanism, and formal referral pathways are fully implemented. The Commercial Tenant Relocation and Livelihood Restoration Plan establishes procedures for consultation with affected tenants, eligibility verification, relocation arrangements, transitional assistance, livelihood restoration measures, grievance management, monitoring, and implementation responsibilities to ensure that temporary economic displacement does not result in significant adverse livelihood impacts. Residual impacts on identified cultural heritage assets are also expected to remain **Low** following implementation of the Cultural Heritage Management Plan (CHMP), ongoing consultation with the Bogor City Tourism and Culture Office and the Cultural Heritage Expert Team (TACB), and continuous heritage monitoring during construction.

Overall, with effective implementation of the proposed mitigation and monitoring measures, no significant adverse residual environmental or social impacts are anticipated. The Project is expected to deliver substantial long-term positive outcomes through improved healthcare services, increased treatment capacity, enhanced access to mental health services, employment opportunities, and conservation of the historical significance of the RSMM hospital complex.

**Table 7.4 Summary of Environmental and Social Impact and Residual Impact**

| <b>Project Phase</b>    | <b>Key Environmental and Social Impact</b>              | <b>Inherent Impact</b> | <b>Principal Mitigation Measures</b>                                                  | <b>Residual Impact</b> |
|-------------------------|---------------------------------------------------------|------------------------|---------------------------------------------------------------------------------------|------------------------|
| <b>Pre-construction</b> | Community concerns and misinformation                   | Medium                 | Stakeholder Engagement Plan (SEP), information disclosure, consultation, GRM          | Low                    |
|                         | Exclusion of vulnerable groups from consultation        | Low                    | Inclusive stakeholder engagement and targeted consultation                            | Low                    |
|                         | Occupational health and safety during surveys           | Low                    | OHS procedures, supervision, PPE                                                      | Low                    |
|                         | Inadequate consideration of cultural heritage in design | Medium                 | Cultural Heritage Management Plan (CHMP), consultation with TACB                      | Low                    |
| <b>Construction</b>     | Air quality deterioration (dust and emissions)          | Medium                 | Dust suppression, vehicle management, material covering                               | Low                    |
|                         | Noise and vibration                                     | Medium                 | Working hour restrictions, equipment maintenance, noise control                       | Low                    |
|                         | Traffic congestion and access disruption                | High                   | Traffic Management Plan (TMP), traffic marshals, coordination with authorities        | Medium                 |
|                         | Occupational health and safety                          | High                   | OHS Management Plan, PPE, training, supervision                                       | Low                    |
|                         | Community health and safety                             | Medium                 | Site fencing, access control, communication programme, emergency response             | Low                    |
|                         | GBV/SEA/SH and safeguarding risks                       | High                   | Worker Code of Conduct, safeguarding measures, GBV Action Plan, worker induction, GRM | Low                    |
|                         | Temporary economic displacement of commercial tenants   | Medium                 | Commercial Tenant Relocation and Livelihood Restoration Plan                          | Low                    |
|                         | Temporary disruption of hospital services and utilities | Medium                 | Construction phasing, Utility Management Plan, hospital coordination                  | Low                    |
|                         | Impacts on cultural heritage assets                     | Medium                 | Cultural Heritage Management Plan (CHMP), heritage monitoring, consultation with TACB | Low                    |
| <b>Operation</b>        | Healthcare waste generation                             | Medium                 | Healthcare Waste Management Plan                                                      | Low                    |
|                         | Wastewater generation                                   | Medium                 | WWTP operation, routine monitoring                                                    | Low                    |
|                         | Increased traffic generation                            | High                   | Operational Traffic Management Plan                                                   | Medium                 |

| <b>Project Phase</b>  | <b>Key Environmental and Social Impact</b>                                                        | <b>Inherent Impact</b> | <b>Principal Mitigation Measures</b>                                 | <b>Residual Impact</b> |
|-----------------------|---------------------------------------------------------------------------------------------------|------------------------|----------------------------------------------------------------------|------------------------|
|                       | Occupational and community health and safety                                                      | Medium                 | OHS procedures, Emergency Preparedness and Response Plan             | Low                    |
|                       | Risk of exclusion or unequal access for vulnerable patients, including patients with disabilities | Medium                 | Hospital Relocation and Transition Management Plan                   | Low                    |
|                       | Preservation and adaptive reuse of cultural heritage assets                                       | Medium Positive        | Heritage conservation programme and adaptive reuse of ODCB buildings | Medium Positive        |
| <b>Post-operation</b> | Demolition waste and site restoration                                                             | Medium                 | Waste management, site rehabilitation, environmental restoration     | Low                    |

## 8 GENDER ANALYSIS AND ACTIONS

### 8.1 Gender Baseline

The redevelopment of Rumah Sakit Dr. H. Marzoeqi Mahdi (RSMM) Bogor will involve interactions with a diverse range of stakeholders, including hospital staff, patients, caregivers, visitors, contractors, service providers, and surrounding communities. As a specialized mental health hospital that will remain operational throughout the construction period, the Project presents unique environmental and social considerations related to gender equality, protection of vulnerable groups, and equitable access to healthcare services and inclusive participation in Project benefits.

Gender considerations form an integral component of the Environmental and Social Assessment because women and men may experience project-related impacts, benefits, risks, and access to information differently. These differences are influenced by social roles, caregiving responsibilities, employment patterns, mobility, access to healthcare services, participation in decision-making, and opportunities for professional development. Accordingly, a gender-responsive assessment has been undertaken to identify existing gender conditions, understand potential differential impacts, and inform the development of appropriate management measures throughout Project implementation. The assessment draws upon demographic information, stakeholder consultations, household surveys, institutional data provided by RSMM, and field observations undertaken during the ESIA process.

Within the Area of Influence (AoI), women actively participate in household decision-making, community organizations, local economic activities, and healthcare-related decision-making. Women also represent one of the principal user groups of healthcare services and frequently undertake caregiving responsibilities for children, elderly family members, persons with disabilities, and individuals with mental health conditions. Consequently, temporary disruptions associated with construction activities—including changes to hospital access, traffic circulation, environmental quality, noise, dust, and public safety—may affect women differently from men.

Within RSMM, women constitute approximately 60% of the total workforce, demonstrating their significant contribution to hospital operations, particularly in nursing services, clinical support, administration, pharmacy, laboratory services, nutrition, and other allied health professions. The hospital applies principles of equal opportunity and non-discrimination in accordance with Indonesian labour legislation and public service regulations.

Women also play an important role in specialized medical services. Based on RSMM Human Resources data, female specialist and sub-specialist doctors account for approximately 60% of the hospital's specialist workforce, indicating that women contribute substantially not only to general healthcare delivery but also to highly specialized psychiatric and non-psychiatric medical services. This workforce composition provides a strong foundation for ensuring that female healthcare professionals benefit equitably from Project-supported institutional strengthening, specialist medical education, technical training, and professional development activities.

Gender representation in hospital management is also recognized as an important indicator of institutional capacity for inclusive decision-making. Participation of women in leadership and management positions supports gender-responsive governance and strengthens the implementation of environmental and social commitments. Information regarding the gender composition of management personnel has been requested from RSMM and will be incorporated into this ESIA upon confirmation. A summary of gender representation in management positions is presented in Table 8.1.

**Table 8.1 Gender Representation in Management Positions**

| Management Position                       | Male | Female | Total | Female (%) |
|-------------------------------------------|------|--------|-------|------------|
| <b>Director</b>                           | 0    | 1      | 1     | 100        |
| <b>Deputy Directors</b>                   | 2    | 1      | 3     | 33         |
| <b>Heads of Medical Departments (KSM)</b> | 3    | 0      | 3     | 0          |
| <b>Heads of Units / Installations</b>     | 11   | 10     | 21    | 48         |
| <b>Heads of Administrative Divisions</b>  | 5    | 4      | 9     | 44         |
| <b>Total</b>                              | 21   | 16     | 37    | 43         |

Source: RSMM Human Resources Division

In addition to women, several vulnerable groups were identified within both the surrounding communities and hospital operations, including:

- Elderly persons;
- Female-headed households;
- Persons with disabilities;
- Children and adolescents;
- Low-income households;
- Psychiatric inpatients;
- Female patients;
- Caregivers accompanying patients;
- Female employees.

These groups may experience greater sensitivity to temporary environmental disturbances, changes in accessibility, occupational risks, or disruptions to healthcare services during Project implementation. Particular attention is therefore required to ensure that Project activities do not disproportionately affect vulnerable individuals and that appropriate safeguarding measures are implemented throughout the Project lifecycle.

Considering the characteristics of the Project and the operational nature of RSMM, a Gender Assessment is required to evaluate whether project activities may result in disproportionate impacts on women and vulnerable groups. The assessment also identifies opportunities to enhance inclusive participation, equitable access to project benefits, prevention of Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA), Sexual Harassment (SH), and protection of vulnerable populations.

The findings of the Gender Assessment provide the technical basis for developing a Project-specific Gender Action Plan (GAP) and associated environmental and social management measures.

## 8.2 Gender-Specific Risks and Vulnerabilities

The redevelopment activities at RSMM may create gender-specific risks and vulnerabilities affecting female workers, female patients, caregivers, and vulnerable groups, particularly individuals with mental health conditions.

Potential gender-related risks identified for the Project include the following:

### ☐ Risks to Female and Vulnerable Psychiatric Patients

Patients with mental health conditions, particularly women and vulnerable individuals, may face increased risks related to:

- harassment, exploitation, abuse, or neglect;
- reduced ability to report grievances or safety concerns;
- dependency on caregivers or hospital personnel;
- confusion or psychological distress caused by construction activities;
- disturbance from noise, vibration, and increased movement of workers and equipment.

Some patients may have limited capacity to recognize unsafe situations or protect themselves from inappropriate behavior, requiring additional safeguarding measures during Project implementation.

### ☐ Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH)

The presence of external construction workers and increased workforce mobility may increase risks associated with:

- inappropriate behavior toward patients, staff, or visitors;
- verbal harassment or intimidation;
- exploitation of vulnerable individuals;
- unsafe interactions between workers and hospital users.

Although the likelihood of severe incidents may be considered manageable, the vulnerability of psychiatric patients requires a precautionary and preventive approach.

To minimize the risks of Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH) throughout the Project, the Project Implementation Unit (PIU) will implement preventive and responsive measures in accordance with Law No. 12 of 2022 on Sexual Violence Crimes (UU TPKS) and international good practices, including the World Bank Good Practice Note on SEA/SH and the IFC Performance Standards.

Prior to contractor mobilization, the project will identify and map available GBV service providers within the project area, including the Regional Technical Implementation Unit for the Protection of Women and Children (UPTD PPA), healthcare facilities, legal aid organizations, and qualified non-governmental organizations (NGOs) providing support services for GBV survivors. The project will establish a formal GBV referral pathway through Memoranda of Understanding (MoUs) or other formal cooperation agreements with these service providers to ensure that survivors have timely access to medical care, psychosocial support, legal assistance, and protection services.

All project workers, contractors, and subcontractors will be required to sign and comply with a Worker Code of Conduct, which explicitly prohibits all forms of GBV, SEA, and SH. Mandatory induction and refresher training will be provided on gender sensitivity, respectful behaviour, appropriate interaction with local communities, and prevention of GBV-related risks before commencement of work.

The Project will also establish a GBV-sensitive Grievance Mechanism that ensures confidentiality, protects survivors from retaliation, and adopts a survivor-centred approach throughout the complaint handling process. All allegations of GBV, SEA, and SH will be managed promptly, confidentially, and in accordance with established referral procedures and applicable legal requirements. Occupational Risks for Female Workers

Female workers may face:

- unequal participation opportunities;

- workplace harassment or discrimination;
- inadequate sanitation or welfare facilities;
- occupational safety concerns during construction activities.

#### ☐ Community and Public Safety Risks

Women, children, elderly persons, and persons with disabilities within and around the hospital environment may be disproportionately affected by:

- restricted access routes;
- traffic and mobility disruptions;
- reduced sense of safety during nighttime activities;
- inadequate lighting or site security.

#### ☐ Privacy and Dignity Concerns

The redevelopment activities may temporarily affect:

- patient privacy during treatment and hospitalization;
- confidentiality of sensitive health conditions;
- comfort and dignity of vulnerable patients and caregivers.

The Project therefore requires gender-sensitive management measures to minimize risks and ensure protection of vulnerable groups.

### **8.3 Gender Action Plan**

The Project will implement gender-sensitive measures to prevent, minimize, and manage gender-related risks and vulnerabilities during Project implementation.

**Table 8.2. Gender Action Plan**

| <b>Issue/Risk</b>                                    | <b>Action Measures</b>                                                                                             | <b>Responsible Party</b>           | <b>Timing</b>                                                          | <b>Estimated Cost*</b>                               |
|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|------------------------------------|------------------------------------------------------------------------|------------------------------------------------------|
| <b>Protection of vulnerable psychiatric patients</b> | Restrict construction access near sensitive treatment areas and maintain supervision of vulnerable patients        | Contractor and Hospital Management | Prior to construction and throughout construction phase                | IDR 20.000.000 (Included in Contractor's HSE Budget) |
| <b>GBV/SEA/SH risks</b>                              | Implement worker Code of Conduct prohibiting harassment, exploitation, and abusive behavior                        | Contractor                         | Prior to worker mobilization and throughout the Project                | IDR 10.000.000 (Included in Contractor's HSE Budget) |
| <b>Worker behavior and safeguarding</b>              | Mandatory induction and awareness training regarding safeguarding and ethical conduct within hospital environments | Contractor and PMU                 | Before mobilization and every 6 months during construction             | IDR 10.000.000 (Contractor Training Budget)          |
| <b>Gender-sensitive grievance handling</b>           | Provide confidential and accessible GRM channels, including GBV-sensitive complaint handling procedures            | PMU and GRM Focal Point            | Prior to construction and maintained throughout the Project            | IDR 20.000.000 (Project Operational Budget)          |
| <b>Privacy and dignity of patients</b>               | Maintain privacy barriers and controlled access to patient treatment areas                                         | Hospital Management and Contractor | Before commencement of construction and maintained during construction | IDR 75.000.000 (Included in Construction Cost)       |
| <b>Occupational safety for female workers</b>        | Provide adequate sanitation facilities, lighting, PPE, and welfare facilities for female workers                   | Contractor                         | Prior to worker mobilization and throughout construction               | IDR 50.000.000 (Included in Contractor's HSE Budget) |
| <b>Inclusive stakeholder engagement</b>              | Ensure participation of women and vulnerable groups during consultation activities                                 | PMU                                | Throughout project preparation, construction, and operation            | IDR 30.000.000 Stakeholder Engagement Budget         |
| <b>Community and patient safety</b>                  | Install adequate lighting, signage, and security measures around construction areas                                | Contractor                         | Prior to construction and throughout construction                      | IDR 100.000.000 (Included in                         |

| Issue/Risk                                                                          | Action Measures                                                                                                                                                                                                                                                                                                                                                                                                                   | Responsible Party                                  | Timing                                                  | Estimated Cost*                                                                  |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|---------------------------------------------------------|----------------------------------------------------------------------------------|
|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                    |                                                         | Contractor's HSE Budget)                                                         |
| <b>Prevention of harassment and discrimination</b>                                  | Enforce non-discrimination and equal opportunity principles in recruitment and employment practices                                                                                                                                                                                                                                                                                                                               | Contractor and PMU                                 | Recruitment stage and throughout Project implementation | IDR 10.000.000 (Included in HR Budget)                                           |
| <b>Safeguarding vulnerable groups</b>                                               | Limit unnecessary interaction between construction workers and vulnerable patients                                                                                                                                                                                                                                                                                                                                                | Hospital Management and Contractor                 | Throughout construction phase                           | IDR 25.000.000 (Included in Contractor's HSE Budget)                             |
| <b>Equal access to professional development for female healthcare professionals</b> | Ensure that female specialist and sub-specialist doctors have equal opportunity to participate in Project-supported specialist medical training, continuing professional education (CME), technical workshops, fellowships, and leadership development programmes through transparent and merit-based selection processes. Maintain gender-disaggregated records of participants and periodically review participation rates.     | RSMM Management, Human Resources Division, and PMU | Throughout Project implementation                       | IDR 75,000,000 (Included in Capacity Building and Training Budget)               |
| <b>Women's participation in employment opportunities</b>                            | Encourage contractors to provide equal employment opportunities for women during construction, particularly in administrative, environmental, occupational health and safety (HSE), quality control (QC), laboratory support, logistics, document control, community liaison, and other positions appropriate to required qualifications. Recruitment shall be based on competency and the principle of equal pay for equal work. | Contractor and PMU                                 | Recruitment stage and throughout construction           | IDR 30,000,000 (Included in Contractor's Human Resources and Recruitment Budget) |
| <b>Monitoring of gender equality outcomes</b>                                       | Monitor gender-disaggregated data on employment, participation in training programmes, leadership development opportunities, grievances, and consultation activities to evaluate implementation of the Gender Action Plan and identify opportunities for continual improvement. Results will be reported as                                                                                                                       | PMU and RSMM Human Resources Division              | Annually throughout Project implementation              | IDR 20,000,000 (Included in ESMP Monitoring Budget)                              |

| Issue/Risk | Action Measures                                             | Responsible Party | Timing | Estimated Cost* |
|------------|-------------------------------------------------------------|-------------------|--------|-----------------|
|            | part of the Project's ESMP monitoring and reporting system. |                   |        |                 |

\* The estimated costs presented in this table are preliminary and indicative in nature. Actual costs may vary depending on final project design, implementation arrangements, market conditions, and contractor pricing, and will be further refined during subsequent stages of project development.

The implementation of the Gender Action Plan will be integrated into the Project's Environmental and Social Management Plan (ESMP), Occupational Health and Safety (OHS) procedures, labor management procedures, and Stakeholder Engagement Plan (SEP).

#### **8.4 Monitoring Indicator**

Monitoring activities will be conducted to evaluate the effectiveness of gender-related management measures and safeguarding commitments throughout Project implementation.

**Table 8.3. Gender Monitoring Indicator**

| Objective                                                                  | Performance Indicator                                                                                    | Monitoring Method                                   | Responsibility                     | Frequency                                | Target                                            |
|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------|------------------------------------|------------------------------------------|---------------------------------------------------|
| <b>Ensure workers understand and comply with Project ethical standards</b> | Percentage of workers who have signed the Worker Code of Conduct                                         | Review of contractor employment records             | Contractor / PMU                   | Prior to mobilization and Quarterly      | 100% of workers                                   |
| <b>Improve workers' awareness of GBV, SEA/SH and safeguarding</b>          | Percentage of workers completing mandatory induction and refresher training                              | Training records and attendance sheets              | Contractor                         | Prior to mobilization and Every 6 months | 100% of workers                                   |
| <b>Strengthen stakeholder participation</b>                                | Number and percentage of women and vulnerable groups participating in consultation activities            | Attendance records and consultation reports         | PMU                                | Quarterly                                | Increasing participation throughout Project       |
| <b>Ensure availability of GBV survivor support services</b>                | Formal GBV referral pathway established (including signed MoUs with relevant service providers)          | Review of signed agreements and referral procedures | PMU                                | Prior to mobilization and Annual review  | Referral pathway fully established                |
| <b>Ensure accessibility of grievance mechanism</b>                         | Functionality of confidential GBV-sensitive grievance mechanism                                          | GRM audit and document review                       | PMU                                | Quarterly                                | Fully operational                                 |
| <b>Improve grievance response</b>                                          | Percentage of GBV/SEA/SH complaints managed according to survivor-centred procedures                     | GRM records                                         | PMU / GRM Focal Point              | Monthly                                  | 100%                                              |
| <b>Prevent misconduct by project personnel</b>                             | Number of confirmed breaches of the Worker Code of Conduct                                               | Contractor disciplinary records                     | Contractor                         | Monthly                                  | Zero tolerance                                    |
| <b>Protect vulnerable psychiatric patients</b>                             | Number of incidents involving patients caused by construction activities                                 | Incident reports                                    | Contractor and Hospital Management | Monthly                                  | Zero incidents                                    |
| <b>Maintain patient privacy and dignity</b>                                | Number of complaints related to patient privacy, dignity, or inappropriate worker behaviour              | GRM records                                         | PMU and Hospital                   | Monthly                                  | Zero substantiated complaints                     |
| <b>Ensure safe interaction between workers and hospital users</b>          | Compliance with restricted access to sensitive treatment areas                                           | Site inspections and supervision reports            | Contractor                         | Weekly                                   | 100% compliance                                   |
| <b>Promote gender-responsive working conditions</b>                        | Availability of separate sanitation, changing, and welfare facilities for female workers                 | Site inspections                                    | Contractor                         | Monthly                                  | Facilities available at all times                 |
| <b>Promote equal employment opportunity</b>                                | Percentage of female workers employed during construction, including administrative, HSE, environmental, | Employment records                                  | Contractor                         | Quarterly                                | Recruitment undertaken based on equal opportunity |

| Objective                                                                                                                 | Performance Indicator                                                                                                                                                                                                          | Monitoring Method                                            | Responsibility                      | Frequency        | Target                                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|-------------------------------------|------------------|---------------------------------------------------------------------------------------------------------|
|                                                                                                                           | quality control, laboratory support, community liaison, and other suitable positions                                                                                                                                           |                                                              |                                     |                  | and competency principles                                                                               |
| <b>Strengthen community awareness</b>                                                                                     | Number of community awareness sessions on GBV, SEA/SH and grievance mechanisms                                                                                                                                                 | Consultation reports                                         | PMU                                 | Every six months | At least two sessions per year                                                                          |
| <b>Monitor implementation effectiveness</b>                                                                               | Annual review of GBV/SEA/SH Prevention and Response Plan                                                                                                                                                                       | Internal audit and monitoring report                         | PMU                                 | Annually         | Continuous improvement achieved                                                                         |
| <b>Promote equal participation of female specialist and sub-specialist doctors in Project-supported capacity building</b> | Percentage of female specialist and sub-specialist physicians participating in Project-supported specialist training, continuing medical education (CME), technical workshops, fellowships, or leadership development programs | Review of training records, attendance lists, and HR records | RSMM Human Resources Division / PMU | Annually         | Female participation reflects their representation among eligible specialist and sub-specialist doctors |
| <b>Promote women's leadership and career advancement</b>                                                                  | Number and percentage of female healthcare professionals participating in Project-supported leadership development, professional certification, or advanced technical training                                                 | Review of HR records and training reports                    | RSMM Human Resources Division       | Annually         | Increasing participation throughout Project implementation                                              |

Monitoring results will be documented and incorporated into regular environmental and social monitoring reports. Corrective measures will be implemented where necessary to strengthen gender-sensitive and safeguarding practices throughout Project implementation.

## 9 CLIMATE ANALYSIS AND ACTIONS

The climate change analysis was prepared using project-specific data from the RSMM ESIA and masterplan, including location, site area, building area, development phases, and hospital capacity. Current and future climate risks were assessed using CatNet screening results for the RSMM location, covering hazards such as flood, earthquake, drought, heat wave, heat stress, windstorm, landslide, wildfire, and extreme precipitation. The GHG estimation was based on actual PLN electricity consumption data, RSMM building area, masterplan floor area, emission factors, and engineering assumptions, with reference to AIIB guidance note on incorporating climate resilience into investment solutions.

### 9.1 Climate Risk Assessment

This section assesses the climate-related risks and greenhouse gas emissions associated with the Development of RSMM in Bogor City, West Java Province. The assessment aims to ensure that climate resilience and climate mitigation measures are integrated into the Project design, construction, and operation.

The climate analysis covers physical climate risks, geohazards, adaptation measures, green building measures, and greenhouse gas (GHG) emissions. The assessment considers the critical function of RSMM as a healthcare facility that must remain operational during climate-related events and other natural hazards.

The assessment follows a risk-screening approach consistent with climate-resilient infrastructure planning. The main climate and hazard aspects assessed include drought, heat wave, heat stress, extreme precipitation, flooding, windstorm, landslide, wildfire, and earthquake. Although an earthquake is not a climate-related hazard, it is included because it is a major physical hazard for the Project location and is relevant to hospital infrastructure safety.

*Table 9.1. Current Climate and Geohazard Risk Screening*

| Hazard        | Screening Result | Key Value / Description                  | Risk Interpretation                       |
|---------------|------------------|------------------------------------------|-------------------------------------------|
| Fluvial flood | Outside          | Outside mapped fluvial flood hazard area | Low direct river flood exposure           |
| Pluvial flood | Outside          | Outside mapped pluvial flood hazard area | Low direct mapped pluvial flood exposure, |

| Hazard                            | Screening Result | Key Value / Description               | Risk Interpretation                                              |
|-----------------------------------|------------------|---------------------------------------|------------------------------------------------------------------|
|                                   |                  |                                       | but local drainage still needs to be managed                     |
| Storm surge                       | Outside          | Not relevant to inland Bogor location | Not material                                                     |
| Earthquake – bedrock condition    | High             | PGA 0.298 g; MMI VIII                 | Significant physical risk; seismic design is required            |
| Earthquake – local soil condition | High             | PGA 0.393 g; MMI VIII                 | Significant physical risk; soil condition increases hazard level |
| Windstorm                         | Low              | Peak gust 20 m/s                      | Manageable through standard design and maintenance               |
| Landslide                         | Very low         | Very low hazard                       | Manage through drainage, slope control, and site inspection      |
| Wildfire                          | Negligible       | Negligible hazard                     | Not material                                                     |

The current risk screening shows that the most important physical hazard for RSMM is earthquake risk, with high hazard levels under both bedrock and local soil conditions. Although the site is outside the mapped flood hazard areas, localized drainage and stormwater management remain important because Bogor is characterized by high rainfall and urban runoff conditions. Windstorms, landslides, and wildfire are not considered major risks, but they should still be addressed through standard engineering design, site maintenance, and emergency preparedness.

### 9.1.1 Future Climate Risk Analysis

Future climate risk screening was conducted for four climate scenarios, namely SSP1-2.6, SSP2-4.5, SSP3-7.0, and SSP5-8.5, across future time horizons from 2030 to 2085. The risk scoring system classifies risk as follows: negligible (0–2), minor (2–4), moderate (4–6), significant (6–8), and extreme (8–10).

To support interpretation, average risk scores were calculated across the four SSP scenarios for three representative time horizons: 2030, 2050, and 2085.

Table 9.2. Calculation of Average Future Climate Risk Scores

| Climate Hazard        | Average Score 2030 | Risk Level 2030 | Average Score 2050 | Risk Level 2050 | Average Score 2085 | Risk Level 2085 |
|-----------------------|--------------------|-----------------|--------------------|-----------------|--------------------|-----------------|
| Drought               | 6.50               | Significant     | 9.05               | Extreme         | 9.25               | Extreme         |
| Heat wave             | 6.85               | Significant     | 9.25               | Extreme         | 9.63               | Extreme         |
| Heat stress           | 0.00               | Negligible      | 0.00               | Negligible      | 0.00               | Negligible      |
| Extreme precipitation | 0.00               | Negligible      | 0.03               | Negligible      | 1.75               | Negligible      |

The future climate risk analysis indicates that drought and heat wave are the most significant climate-related risks for RSMM. In 2030, both drought and heat wave are already classified as significant based on the average risk scores. By 2050 and 2085, both hazards increase to extreme risk levels across the average scenario results.

Drought risk increases from an average score of 6.50 in 2030 to 9.25 in 2085. This represents an increase of 2.75 points, or approximately 42% compared with the 2030 score. This trend indicates increasing potential pressure on water supply reliability, sanitation, cooling systems, laundry services, wastewater treatment, and other water-dependent hospital operations.

Heat wave risk increases from an average score of 6.85 in 2030 to 9.63 in 2085. This represents an increase of 2.78 points, or approximately 41% compared with the 2030 score. This indicates that future operation of RSMM may face higher cooling demand, increased HVAC load, higher electricity consumption, and increased thermal comfort risks for patients, workers, visitors, and contractors.

Heat stress is screened as negligible across all scenarios and time horizons. However, because hospitals serve vulnerable populations, including patients with physical and mental health conditions, children, elderly persons, and workers in high-exposure activities, heat-related risk should still be managed through building design, HVAC reliability, shaded areas, access to drinking water, and emergency response procedures.

Extreme precipitation is screened as negligible on average, with only minor risk under the highest-emission scenario by 2085. Nevertheless, given Bogor's high rainfall baseline and the need for uninterrupted hospital operation, drainage, stormwater management, runoff control, and flood-safe utility placement remain important design requirements.

### 9.1.2 Climate Hazards, Impacts, and Adaptation Measures

The climate risk and adaptation table show that the key issues requiring attention for the RSMM Project are heat waves, drought or water stress, local drainage/flooding, and the resilience of hospital utility systems. These risks are important because hospital operations depend on continuous electricity, water supply, HVAC, wastewater treatment, medical waste

management, and safe access during both construction and operation. Therefore, the Project should prioritize climate-resilient building design, efficient HVAC systems, reliable water storage and water-saving measures, adequate drainage, flood-protected utility areas, backup power, and strong operation and maintenance procedures to maintain uninterrupted healthcare services under future climate conditions.

Table 9.3. Climate Hazards, Potential Impacts, and Adaptation Measures

| No | Project Activities                                    | Climate Risk, Impacts, and Adaptation Measures                                    |                                                                                                                 |                                                                                         |                                                                                              |                                                                               |                                                                                                                     |                                                                            |                                                                                                                      |                                                                                |                                                                                            |                                                                              |                                                                                                                             |
|----|-------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
|    |                                                       | Temperature Rise                                                                  |                                                                                                                 | Hot Days (Heat Wave)                                                                    |                                                                                              | Tropical Nights (Heat Wave)                                                   |                                                                                                                     | Drought / Water Stress                                                     |                                                                                                                      | Flood (Extreme Precipitation)                                                  |                                                                                            | Soil Instability/Landslide                                                   |                                                                                                                             |
|    |                                                       | Key Climate Risks                                                                 | Adaptation Measures                                                                                             | Key Climate Risks                                                                       | Adaptation Measures                                                                          | Key Climate Risks                                                             | Adaptation Measures                                                                                                 | Key Climate Risks                                                          | Adaptation Measures                                                                                                  | Key Climate Risks                                                              | Adaptation Measures                                                                        | Key Climate Risks                                                            | Adaptation Measures                                                                                                         |
| 1  | Planning, permitting, and detailed engineering design | Building design may underestimate future cooling demand and heat exposure.        | Integrate climate-resilient design, passive cooling, shading, roof insulation, and efficient building envelope. | Higher cooling demand and thermal comfort risk for patients, visitors, and workers.     | Size HVAC systems based on future heat conditions and apply energy-efficient cooling design. | Higher night-time indoor temperature may affect patient comfort and recovery. | Ensure adequate night-time cooling, ventilation control, and thermal comfort standards in wards and critical areas. | Future drought may affect water supply reliability for hospital operation. | Include water balance, water storage, water-saving fixtures, and rainwater harvesting / reuse feasibility in design. | Undersized drainage may cause ponding, runoff, or service disruption.          | Design site drainage, detention, and utility protection based on high rainfall conditions. | Inadequate geotechnical design may increase local slope or foundation risks. | Conduct geotechnical assessment and integrate slope stabilization, retaining structures, and drainage control where needed. |
| 2  | Mobilization of construction tools and materials      | Higher ambient temperature may reduce equipment efficiency and increase fuel use. | Maintain equipment regularly and avoid unnecessary idling.                                                      | Workers may experience heat stress during loading, unloading, and transport activities. | Apply heat-stress management, rest breaks, drinking water, and shaded waiting areas.         | Night work may create fatigue and safety risks if conducted to avoid          | Provide adequate lighting, supervision, rest periods, and safe work procedures for night activities.                | Dry conditions may increase dust during vehicle movement.                  | Apply controlled dust suppression and use water efficiently.                                                         | Heavy rainfall may disrupt material delivery and increase traffic safety risk. | Prepare traffic management and wet-weather logistics plans.                                | Access routes or temporary storage areas may become unstable during wet      | Inspect access routes and stabilize temporary storage areas.                                                                |

## ESIA-ESMP

## Development of Dr. H. Marzoeqi Mahdi Psychiatric Hospital

| No | Project Activities                                       | Climate Risk, Impacts, and Adaptation Measures                  |                                                                         |                                                            |                                                                                              |                                                            |                                                                                               |                                                           |                                                            |                                                                                  |                                                                                              |                                                      |                                                                                     |
|----|----------------------------------------------------------|-----------------------------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------------------------|
|    |                                                          | Temperature Rise                                                |                                                                         | Hot Days (Heat Wave)                                       |                                                                                              | Tropical Nights (Heat Wave)                                |                                                                                               | Drought / Water Stress                                    |                                                            | Flood (Extreme Precipitation)                                                    |                                                                                              | Soil Instability/Landslide                           |                                                                                     |
|    |                                                          | Key Climate Risks                                               | Adaptation Measures                                                     | Key Climate Risks                                          | Adaptation Measures                                                                          | Key Climate Risks                                          | Adaptation Measures                                                                           | Key Climate Risks                                         | Adaptation Measures                                        | Key Climate Risks                                                                | Adaptation Measures                                                                          | Key Climate Risks                                    | Adaptation Measures                                                                 |
|    |                                                          |                                                                 |                                                                         |                                                            |                                                                                              | daytime heat.                                              |                                                                                               |                                                           |                                                            |                                                                                  |                                                                                              | conditions.                                          |                                                                                     |
| 3  | Construction and operation of base camp and laydown area | Temporary facilities may become overheated and uncomfortable.   | Provide shaded, ventilated, and heat-reflective temporary facilities.   | Workers may face heat stress during daily site activities. | Provide drinking water, shaded rest areas, adjusted work hours, and heat-stress briefings.   | Poor nighttime ventilation may reduce worker rest quality. | Ensure adequate ventilation and safe accommodation/rest areas.                                | Base camp activities may increase temporary water demand. | Use water-efficient fixtures and monitor water use.        | Laydown areas may be inundated, damaging materials and causing pollution runoff. | Provide temporary drainage, elevated material storage, and covered hazardous material areas. | Stockpiles and temporary slopes may become unstable. | Stabilize stockpiles, cover loose materials, and maintain slope drainage.           |
| 4  | Demolition of existing buildings                         | Hot conditions may increase worker fatigue and dust generation. | Schedule high-exposure work during cooler hours and apply dust control. | Workers may be exposed to heat stress during demolition.   | Implement work-rest cycles, hydration, PPE, and emergency response for heat-related illness. | Night demolition may increase safety and noise risks.      | Limit night work where possible and ensure lighting, supervision, and community notification. | Dry conditions may increase dust from demolition debris.  | Use controlled water spraying and cover debris stockpiles. | Rainfall may mobilize debris, sediment, and contaminated runoff.                 | Provide temporary drainage, sediment traps, and covered debris storage.                      | Demolition may destabilize nearby surface slopes.    | Apply demolition method statement, exclusion zones, and slope/structure monitoring. |
| 5  | Land preparation and                                     | Dry and hot conditions may                                      | Apply dust suppression,                                                 | Workers and operators may                                  | Apply heat-stress procedure                                                                  | Night work may increase                                    | Provide safe lighting, traffic controls, and supervision.                                     | Dry soil conditions may increase                          | Maintain soil moisture where                               | Heavy rainfall may cause                                                         | Install silt fences, sediment traps,                                                         | Cut-and-fill works may                               | Implement geotechnical                                                              |

## ESIA-ESMP

## Development of Dr. H. Marzoeqi Mahdi Psychiatric Hospital

| No | Project Activities                                       | Climate Risk, Impacts, and Adaptation Measures                                        |                                                                                                |                                                                          |                                                                             |                                                                 |                                                                                    |                                                                        |                                                                      |                                                                  |                                                                                     |                                                                  |                                                                                            |
|----|----------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------|----------------------------------------------------------------------|------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
|    |                                                          | Temperature Rise                                                                      |                                                                                                | Hot Days (Heat Wave)                                                     |                                                                             | Tropical Nights (Heat Wave)                                     |                                                                                    | Drought / Water Stress                                                 |                                                                      | Flood (Extreme Precipitation)                                    |                                                                                     | Soil Instability/Landslide                                       |                                                                                            |
|    |                                                          | Key Climate Risks                                                                     | Adaptation Measures                                                                            | Key Climate Risks                                                        | Adaptation Measures                                                         | Key Climate Risks                                               | Adaptation Measures                                                                | Key Climate Risks                                                      | Adaptation Measures                                                  | Key Climate Risks                                                | Adaptation Measures                                                                 | Key Climate Risks                                                | Adaptation Measures                                                                        |
|    | earthworks                                               | increase dust and reduce work productivity.                                           | vegetation protection, and phased land clearing.                                               | experience heat stress.                                                  | shaded rest areas, and adjusted working hours.                              | accident risk.                                                  |                                                                                    | erosion and dust.                                                      | needed and minimize exposed soil duration.                           | erosion, sediment runoff, and ponding.                           | temporary drains, and runoff diversion.                                             | trigger localized soil instability.                              | controls, slope stabilization, compaction, and drainage management.                        |
| 6  | Construction of main and supporting facilities           | Higher temperature may increase material stress and cooling load in future buildings. | Use heat-resilient materials, shading, reflective roof treatment, and efficient façade design. | Construction productivity and worker safety may decline during hot days. | Implement heat-stress management and avoid high-risk work during peak heat. | Night-time heat may affect concrete curing and worker recovery. | Control curing conditions and ensure adequate rest and night-time safety measures. | Construction may require water for curing, cleaning, and dust control. | Monitor construction water use and apply efficient water management. | Rainfall may damage materials, foundations, and temporary works. | Store materials above ground, protect excavations, and maintain temporary drainage. | Foundation and retaining works may be affected by soil movement. | Apply geotechnical design, quality control, retaining structures, and drainage protection. |
| 7  | Construction of MEP, drainage, WWTP, electrical systems, | Higher temperature may increase HVAC load and affect                                  | Design HVAC, transformer rooms, and electrical                                                 | Peak cooling demand may increase during heat                             | Provide efficient HVAC, zoning controls, backup power,                      | Night-time cooling demand may increase for                      | Ensure 24-hour cooling reliability for critical healthcare functions.              | Drought may affect water supply, sanitation,                           | Provide water storage, water efficiency, and emergency               | Flooding may damage electrical rooms, WWTP, pumps,               | Elevate/protect critical equipment, provide sump pumps,                             | Underground utilities may be affected by ground                  | Protect buried utilities with proper bedding, compaction,                                  |

## ESIA-ESMP

## Development of Dr. H. Marzoeqi Mahdi Psychiatric Hospital

| No | Project Activities                             | Climate Risk, Impacts, and Adaptation Measures                        |                                                                                                 |                                                                    |                                                                                           |                                                                             |                                                                                                     |                                                                                             |                                                                                                   |                                                                                          |                                                                                                                               |                                                                          |                                                                                              |
|----|------------------------------------------------|-----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
|    |                                                | Temperature Rise                                                      |                                                                                                 | Hot Days (Heat Wave)                                               |                                                                                           | Tropical Nights (Heat Wave)                                                 |                                                                                                     | Drought / Water Stress                                                                      |                                                                                                   | Flood (Extreme Precipitation)                                                            |                                                                                                                               | Soil Instability/Landslide                                               |                                                                                              |
|    |                                                | Key Climate Risks                                                     | Adaptation Measures                                                                             | Key Climate Risks                                                  | Adaptation Measures                                                                       | Key Climate Risks                                                           | Adaptation Measures                                                                                 | Key Climate Risks                                                                           | Adaptation Measures                                                                               | Key Climate Risks                                                                        | Adaptation Measures                                                                                                           | Key Climate Risks                                                        | Adaptation Measures                                                                          |
|    | and backup power                               | electrical equipment lifespan.                                        | systems with adequate cooling and ventilation.                                                  | wave events.                                                       | and commissioning tests.                                                                  | wards and critical rooms.                                                   |                                                                                                     | WWTP operation, and cooling systems.                                                        | cy water supply procedures.                                                                       | and underground utilities.                                                               | backflow protection, and flood-safe utility layout.                                                                           | movement or poor drainage.                                               | on, access chambers, and drainage.                                                           |
| 8  | Hospital operation and maintenance             | Higher temperature may increase cooling cost and stress HVAC systems. | Implement energy management, preventive maintenance, insulation, and efficient cooling systems. | Patients, visitors, and staff may be affected by heat wave events. | Maintain indoor thermal comfort, emergency cooling procedures, and heat-health protocols. | High night-time temperature may affect patient comfort and sensitive wards. | Monitor indoor temperature and maintain night-time cooling for wards, ICU/PICU, and critical areas. | Water stress may disrupt sanitation, laundry, cooling, laboratory, and healthcare services. | Maintain water storage, water-saving practices, leakage control, and emergency water supply plan. | Heavy rainfall may disrupt access, drainage, wastewater systems, and emergency mobility. | Maintain drainage, inspect after heavy rainfall, protect access routes, and include flooding in business continuity planning. | Local soil instability may affect access roads, landscape, or utilities. | Conduct regular inspection of drainage, slopes, retaining structures, and utility corridors. |
| 9  | Wastewater, medical waste, and hazardous waste | Higher temperature may increase odor, pathogen growth,                | Provide proper ventilation, covered storage, timely                                             | Workers handling waste may face heat exposure.                     | Provide PPE, hydration, work-rest cycles, and shaded                                      | Night-time storage under warm conditions may                                | Maintain closed containers, ventilation, and regular waste transfer schedule.                       | Reduced water availability may affect wastewater                                            | Monitor WWTP performance and maintain water-efficient                                             | Flooding may cause overflow, spillage, or contamin                                       | Locate storage and WWTP components in flood-protected                                                                         | Poor drainage may affect waste storage foundation                        | Ensure stable, paved, and drained storage areas                                              |

## ESIA-ESMP

Development of Dr. H. Marzoeqi Mahdi Psychiatric Hospital

| No | Project Activities | Climate Risk, Impacts, and Adaptation Measures |                                                      |                      |                     |                                  |                     |                                   |                      |                                        |                                                                         |                            |                          |
|----|--------------------|------------------------------------------------|------------------------------------------------------|----------------------|---------------------|----------------------------------|---------------------|-----------------------------------|----------------------|----------------------------------------|-------------------------------------------------------------------------|----------------------------|--------------------------|
|    |                    | Temperature Rise                               |                                                      | Hot Days (Heat Wave) |                     | Tropical Nights (Heat Wave)      |                     | Drought / Water Stress            |                      | Flood (Extreme Precipitation)          |                                                                         | Soil Instability/Landslide |                          |
|    |                    | Key Climate Risks                              | Adaptation Measures                                  | Key Climate Risks    | Adaptation Measures | Key Climate Risks                | Adaptation Measures | Key Climate Risks                 | Adaptation Measures  | Key Climate Risks                      | Adaptation Measures                                                     | Key Climate Risks          | Adaptation Measures      |
|    | management         | and storage risk.                              | collection, and temperature-sensitive waste control. |                      | work areas.         | increase odor and nuisance risk. |                     | dilution and cleaning activities. | cleaning procedures. | ation from waste and wastewater areas. | areas, provide secondary containment and emergency response procedures. | ons and access.            | with regular inspection. |

## 9.2 Green Building

While the current RSMM Master Plan incorporates several site-scale Green Building measures, a number of building-scale Green Building features have not yet been specified because the project remains at the masterplan stage. In accordance with Permen PUPR No. 21 of 2021 and the AIIB guidance note, these measures are proposed for incorporation during the Detailed Engineering Design (DED) phase, where technical specifications and performance targets can be fully defined. The proposed measures are intended to enhance energy efficiency, water conservation, resource efficiency, and greenhouse gas (GHG) emission reduction, thereby strengthening the project's contribution to climate change mitigation and adaptation.

The review of the RS Marzoeqi Mahdi (RSMM) Master Plan indicates that several Green Building measures relevant to climate change mitigation and adaptation have already been incorporated at the master planning stage. These measures primarily focus on site-scale interventions, including green open spaces, landscape preservation, stormwater management, sustainable mobility, and heritage conservation, which collectively contribute to reducing heat stress, enhancing climate resilience, improving environmental quality, and supporting lower operational greenhouse gas emissions. The identified Green Building measures incorporated in the Master Plan and their relevance to climate change are summarized in table below.

*Table 9.4. Green Building Measures Incorporated in the RSMM Master Plan and Their Climate Change Relevance*

| <b>Master Plan Component</b>       | <b>Evidence in the Master Plan</b> | <b>Climate Change Relevance</b>                                                                                                          | <b>Implementation Status Green Open</b> |
|------------------------------------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| RTH 1, RTH 2, RTH 3                | Page 7                             | Reduce local microclimate temperatures through evapotranspiration and vegetative shading, thereby contributing to urban heat mitigation. | Incorporated in the Master Plan         |
| Central Garden & Healing Landscape | Page 7,11,14                       | Help mitigate the Urban Heat Island (UHI) effect while improving outdoor thermal comfort and providing climate-resilient healing spaces. | Incorporated in the Master Plan         |
| Retention Pond                     | Page 14                            | Reduce stormwater runoff, improve on-site water retention, and enhance resilience to extreme rainfall events.                            | Incorporated in the Master Plan         |
| Existing Tree Preservation         | Page 6–7                           | Maintain existing carbon stocks, provide natural shading, and support local microclimate regulation.                                     | Incorporated in the Master Plan         |

| Master Plan Component        | Evidence in the Master Plan | Climate Change Relevance                                                                                                      | Implementation Status Green Open |
|------------------------------|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| Additional Tree Planting     | Page 7                      | M Increase carbon sequestration capacity, expand canopy coverage, and improve shading across the site.                        | Incorporated in the Master Plan  |
| Pedestrian & Cycling Network | Page 2–13                   | Encourage active and low-carbon mobility, thereby reducing transport-related greenhouse gas emissions.                        | Incorporated in the Master Plan  |
| Heritage Adaptive Reuse      | Page 10–11                  | Reduce embodied carbon by retaining and reusing existing buildings instead of complete demolition and reconstruction.         | Incorporated in the Master Plan  |
| Zoning with Green Buffer     | Page 11                     | Reduce heat exposure, enhance environmental quality, and provide a more comfortable and restorative environment for patients. | Incorporated in the Master Plan  |
| IPAL                         | Page 7                      | Support sustainable wastewater management and improve sanitation resilience under changing climate conditions.                | Incorporated in the Master Plan  |

The proposed Green Building measures presented in table below represent the technical interventions that will complement the site-scale sustainability features already incorporated in the Master Plan. Once integrated into the Detailed Engineering Design (DED), these measures will provide the basis for quantifying future environmental performance, including reductions in energy consumption, water use, and greenhouse gas (GHG) emissions. Accordingly, the following section presents the proposed approach for assessing the future emission intensity (future condition) of the hospital development under the Green Building scenario.

*Table 9.5. Proposed Green Building Measures for Detailed Design (DED)*

| Proposed Green Building Measure                                                        | Purpose                                               | Expected Climate Benefit                                                | Relevant Green Building Principle (Permen PUPR No. 21/2021) | Implementation Stage              |
|----------------------------------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------|
| <b>High-Performance Building Envelope (roof, walls, glazing, and external shading)</b> | Improve thermal performance and reduce cooling demand | Lower operational energy consumption and greenhouse gas (GHG) emissions | Energy Efficiency                                           | Detailed Engineering Design (DED) |
| <b>Rooftop Solar Photovoltaic (PV) System</b>                                          | Increase the use of                                   | Reduce Scope 2 GHG emissions from grid                                  | Energy Efficiency                                           | Detailed Engineering Design (DED) |

| <b>Proposed Green Building Measure</b>               | <b>Purpose</b>                                               | <b>Expected Climate Benefit</b>                                                             | <b>Relevant Green Building Principle (Permen PUPR No. 21/2021)</b> | <b>Implementation Stage</b>       |
|------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------|
|                                                      | renewable energy                                             | electricity consumption                                                                     |                                                                    |                                   |
| <b>Building Energy Management System (BEMS)</b>      | Monitor and optimize building energy performance             | Improve energy efficiency and reduce operational carbon emissions                           | Energy Efficiency                                                  | Detailed Engineering Design (DED) |
| <b>Water-Efficient Plumbing Fixtures</b>             | Reduce potable water consumption                             | Improve water efficiency and strengthen climate resilience during periods of water scarcity | Water Efficiency                                                   | Detailed Engineering Design (DED) |
| <b>Rainwater Harvesting System</b>                   | Capture and utilize rainwater for non-potable uses           | Reduce dependence on municipal water supply and improve resilience to climate variability   | Water Efficiency                                                   | Detailed Engineering Design (DED) |
| <b>Greywater Recycling System</b>                    | Reuse treated greywater for irrigation and toilet flushing   | Reduce freshwater demand and improve sustainable water management                           | Water Efficiency                                                   | Detailed Engineering Design (DED) |
| <b>Low-Carbon Construction Materials</b>             | Reduce embodied carbon associated with building construction | Lower life-cycle greenhouse gas emissions                                                   | Environmentally Friendly Materials                                 | Detailed Engineering Design (DED) |
| <b>Electric Vehicle (EV) Charging Infrastructure</b> | Support the transition to low-emission transportation        | Reduce transport-related greenhouse gas emissions                                           | Sustainable Transportation / Energy Efficiency                     | Detailed Engineering Design (DED) |

To further strengthen the project's climate performance, several building-scale Green Building measures are proposed for incorporation during the Detailed Engineering Design (DED) stage. These measures complement the site-scale sustainability features already included in the Master Plan and are intended to improve energy efficiency, water conservation, resource efficiency, and greenhouse gas (GHG) emission reduction in accordance with Permen PUPR

No. 21 of 2021 and the AIIB AIIB guidance note. The proposed measures are presented in table below.

*Table 9.6. Future Green Building Performance Indicators*

| Parameter                 | Existing                     | Future Target                      | Source              |
|---------------------------|------------------------------|------------------------------------|---------------------|
| Energy Use Intensity      | To be established during DED | ≥20% reduction from baseline       | Permen PUPR 21/2021 |
| Operational GHG Intensity | Baseline ESIA                | Lower than baseline                | Future energy model |
| Water Consumption         | Baseline                     | Reduced through efficient fixtures | DED                 |
| Green Open Space          | Existing                     | Maintained                         | Masterplan          |
| Tree Canopy               | Existing                     | Maintained                         | Landscape Plan      |
| Stormwater Retention      | Existing                     | Improved                           | Hydraulic Design    |

### 9.3 Greenhouse Gas Calculation

The objective of the greenhouse gas (GHG) calculation is to estimate emissions associated with the Project and identify practical opportunities to reduce emissions from both construction and operation. This is aligned with the project's sustainability commitments and the policy framework referencing the Paris Agreement on Climate Change, which calls for reducing carbon emissions from hospital operations and implementing energy-efficient technologies such as solar panels and water recycling systems.

#### 9.3.1 Major Emission Sources

##### a. Construction Phase

Main expected sources include:

- diesel or gasoline used by construction machinery and vehicles;
- electricity or fuel used at base camp and temporary facilities;
- transportation of materials and demolition waste;
- embodied carbon in cement, steel, masonry, glass, and other major materials.

##### b. Operation Phase

Main expected sources include:

- purchased electricity for building services and hospital operations;
- diesel consumption for backup generators;
- refrigerant leakage from cooling systems;
- emissions associated with wastewater and solid waste;
- indirect emissions associated with water supply and pumping.

Given the nature of the Project as a large hospital redevelopment and expansion, electricity consumption is expected to be the most significant long-term emission source.

For this Project, the most significant operational emissions are likely to come from:

1. purchased electricity;
2. diesel use for backup generation;
3. refrigerant leakage from cooling systems.

During construction, the main contributors are likely to be:

1. heavy equipment fuel use; and
2. embodied carbon in structural and finishing materials.

**Table 9.7. Greenhouse Gas According to Master Plan/Design**

| Parameter                                       | Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Project name                                    | Development of Dr. H. Marzoeqi Mahdi Hospital                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Project location                                | Jl. Dr. Semeru No. 114, Menteng Village, West Bogor Subdistrict, Bogor City, West Java Province                                                                                                                                                                                                                                                                                                                                                                                                         |
| Existing hospital land area                     | ±379,359 m <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Existing hospital building area                 | ±50,566 m <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Existing open space                             | ±328,793 m <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Existing green open space                       | ±240,717 m <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Demolition area of existing buildings           | ±47,814 m <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Planned total development/masterplan floor area | ±177,418 m <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Main development components                     | General Emergency Department, General Services Building, Outdoor Retail Area, RSMM Management Office, Teaching Hospital, Psychiatric Emergency Department, Psychiatric MCU, Psychiatric Inpatient and Outpatient Building, UPIP/PICU, JKN Psychiatric Inpatient Building, Sports Psychiatry Building, PKJN Building, NAPZA Building, Auditorium, Dormitory and Training Center, General Warehouse, IPSRS and Archive Building, Vehicle Fleet/Pool Building, and Waste Management & Utility/MEP Building |
| Development phase                               | Phase 1 and Phase 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

|                                        |                                                                                                                                       |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Development period                     | 2026–2030                                                                                                                             |
| Existing bed capacity                  | 590 beds                                                                                                                              |
| Planned bed capacity after development | 800 beds                                                                                                                              |
| Existing electricity supply            | PLN supply of 415 kVA for corridors and 550 kVA for psychiatric ward                                                                  |
| Existing backup power                  | 635 kVA generator                                                                                                                     |
| GHG calculation basis                  | Floor area-based electricity intensity estimation; to be updated using actual electricity consumption, DED, BOQ, and operational data |

Source: Master Plan

Table 9.8. GHG Estimation

| Category              | Parameter                                                      | Value / Assumption                                 |
|-----------------------|----------------------------------------------------------------|----------------------------------------------------|
| Operational emission  | • Hospital electricity intensity                               | 44.39 kWh/m <sup>2</sup> /year                     |
|                       | • PLN emission factor, Java–Bali grid                          | 0.82 kgCO <sub>2</sub> e/kWh                       |
| Construction emission | • Diesel emission factor                                       | 2.68 kgCO <sub>2</sub> e/liter                     |
|                       | • Heavy equipment fuel intensity                               | 6.0 liter/m <sup>2</sup> of constructed floor area |
|                       | • Temporary construction electricity intensity                 | 12 kWh/m <sup>2</sup>                              |
|                       | • Concrete quantity assumption                                 | 0.50 m <sup>3</sup> /m <sup>2</sup>                |
|                       | • Concrete emission factor                                     | 300 kgCO <sub>2</sub> e/m <sup>3</sup>             |
|                       | • Steel quantity assumption                                    | 0.10 ton/m <sup>2</sup>                            |
|                       | • Steel emission factor                                        | 1.90 tCO <sub>2</sub> e/ton                        |
|                       | • Masonry, walling, and finishing emission intensity           | 0.125 tCO <sub>2</sub> e/m <sup>2</sup>            |
|                       | • MEP, glass, aluminium, and architectural component intensity | 0.150 tCO <sub>2</sub> e/m <sup>2</sup>            |

### A. Construction Phase Emission

The construction-phase GHG emission is estimated at approximately 113,711 tCO<sub>2</sub>e. The largest contributors are embodied carbon from steel, concrete, MEP, glass, aluminium, and finishing materials. Emissions from heavy equipment and temporary construction electricity are relatively smaller compared with material-related emissions.

Table 9.9. Construction Phase GHG Emission Sources

| Emission Source                                     | Basis of Calculation                                                                            | Estimated Emission (tCO <sub>2</sub> e) |
|-----------------------------------------------------|-------------------------------------------------------------------------------------------------|-----------------------------------------|
| Heavy equipment during construction                 | $177,418 \text{ m}^2 \times 6.0 \text{ liter/m}^2 \times 2.68 \text{ kg CO}_2\text{e/liter}$    | 2,853                                   |
| Temporary construction electricity use              | $177,418 \text{ m}^2 \times 12 \text{ kWh/m}^2 \times 0.82 \text{ kg CO}_2\text{e/kWh}$         | 1,746                                   |
| Concrete works                                      | $177,418 \text{ m}^2 \times 0.50 \text{ m}^3/\text{m}^2 \times 300 \text{ kg CO}_2\text{e/m}^3$ | 26,613                                  |
| Steel reinforcement / structural steel              | $177,418 \text{ m}^2 \times 0.10 \text{ ton/m}^2 \times 1.90 \text{ tCO}_2\text{e/ton}$         | 33,709                                  |
| Masonry, walling, and finishing materials           | $177,418 \text{ m}^2 \times 0.125 \text{ tCO}_2\text{e/m}^2$                                    | 22,177                                  |
| MEP, glass, aluminium, and architectural components | $177,418 \text{ m}^2 \times 0.150 \text{ tCO}_2\text{e/m}^2$                                    | 26,613                                  |
| Total Major Construction Phase GHG Emission         |                                                                                                 | 113,711                                 |

## B. Existing Operational Phase Emission

Based on the actual average electricity consumption of 187,065 kWh/month, the estimated existing operational GHG emissions of RSMM from electricity use are approximately 1,841 tCO<sub>2</sub>e/year. Following the masterplan development, with the total floor area increasing to 177,418 m<sup>2</sup>, electricity-related operational emissions are projected to increase to approximately 6,458 tCO<sub>2</sub>e/year. This increase is mainly due to the expansion of building area, service capacity, and electricity demand for larger medical and supporting facilities. Therefore, the implementation of energy efficiency measures, energy-efficient HVAC systems, LED lighting, smart building controls, and potential renewable energy use is important to reduce future operational emissions.

Formula:

$$\text{GHG} = \text{Floor Area} \times \text{Energy Intensity} \times \text{Emission Factor}$$

Table 9.10. Existing Operational Phase Emission

| Floor Area            | Energy Intensity               | Emission Factor              | GHG Emission                  |
|-----------------------|--------------------------------|------------------------------|-------------------------------|
| 50,566 m <sup>2</sup> | 44.39 kWh/m <sup>2</sup> /year | 0.82 kgCO <sub>2</sub> e/kWh | 1,841 tCO <sub>2</sub> e/year |

Therefore, the estimated existing operational GHG emission from electricity use is approximately **1,841 tCO<sub>2</sub>e/year**.

### C. Future Operational Phase Emission (Masterplan)

Assumption:

The Green Building measures incorporated into the project are assumed to achieve an estimated **25% reduction in operational energy consumption** compared with the Business-as-Usual (BAU) scenario. This preliminary assumption is based on the implementation of Green Building principles in accordance with **Permen PUPR No. 21 of 2021**, including energy-efficient building systems, improved building envelope performance, efficient HVAC systems, LED lighting, Building Energy Management Systems (BEMS), and renewable energy integration.

**Table 9.11. Table Calculation of Annual Electricity Consumption and Operational GHG Emission**

| Calculation Step                               | Formula                                                 | Result (kWh/m <sup>2</sup> /year) |
|------------------------------------------------|---------------------------------------------------------|-----------------------------------|
| Existing Energy Intensity                      | 2,244,780 kWh/year ÷ 50,566 m <sup>2</sup>              | <b>44.39</b>                      |
| Adjusted Energy Intensity (25% Energy Savings) | 44.39 × (1 – 25%)                                       | <b>33.29</b>                      |
| Estimated Annual Electricity Consumption       | 177,418 m <sup>2</sup> × 33.29 kWh/m <sup>2</sup> /year | <b>5,906,646</b>                  |
| Projected Operational GHG Emissions            | 5,906,646 kWh/year × 0.82 kgCO <sub>2</sub> e/kWh       | <b>4,843,450</b>                  |

Therefore, the estimated future operational GHG emission from electricity consumption is:

4,843 tCO<sub>2</sub>e/year

#### 9.3.2 GHG Monitoring Indicators

The following GHG-related indicators are recommended for inclusion in the ESMP:

*Table 9.12. Monitoring Indicators*

| Indicator                     | Unit                                           | Frequency          |
|-------------------------------|------------------------------------------------|--------------------|
| Electricity consumption       | kWh/month and kWh/year                         | Monthly and annual |
| Diesel use for generators     | liter/month and liter/year                     | Monthly and annual |
| Refrigerant top-up / leakage  | kg/year                                        | Annual             |
| Water consumption             | m <sup>3</sup> /month and m <sup>3</sup> /year | Monthly and annual |
| Medical waste generation      | ton/month and ton/year                         | Monthly and annual |
| Domestic waste generation     | ton/month and ton/year                         | Monthly and annual |
| Estimated total GHG emissions | tCO <sub>2</sub> e/year                        | Annual             |

### 9.3.3 GHG Monitoring and Reporting

GHG-related monitoring will be integrated into the ESMP monitoring and reporting system. During construction, the contractor will maintain records of fuel consumption, electricity use, material quantities, transport activities, and construction waste generation. During operation, the hospital will maintain records of electricity consumption, diesel generator use, refrigerant top-up or leakage, water consumption, wastewater volume, medical waste generation, and domestic waste generation.

The annual GHG estimate will be updated once operational data become available. The monitoring results will be used to identify emission trends, assess the effectiveness of mitigation measures, and support continuous improvement in hospital energy and resource management.

### 9.3.4 GHG Monitoring Plan

The GHG monitoring plan establishes key parameters to be recorded during both construction and operation phases. During construction, monitoring will focus on fuel consumption, electricity use, major material use, and construction waste generation, with data collected monthly by the contractor and reported through the monthly ESMP report. During operation, monitoring will cover electricity consumption, diesel generator use, refrigerant leakage, water consumption, wastewater volume, medical waste, domestic waste, and total estimated annual GHG emissions. The data will be compiled from utility bills, meter readings, logbooks, waste manifests, WWTP records, HVAC service records, and GHG calculation worksheets. This monitoring system will support regular tracking of resource use, emission sources, and environmental performance, and will provide the basis for annual GHG reporting and ESMP monitoring.

*Table 9.13. GHG reporting and ESMP Monitoring*

| Parameter                     | Unit                  | Frequency                         | Method / Source of Data          | Responsible Party | Reporting           |
|-------------------------------|-----------------------|-----------------------------------|----------------------------------|-------------------|---------------------|
| Construction fuel consumption | liter/month           | Monthly during construction       | Contractor fuel record           | Contractor        | Monthly ESMP report |
| Construction electricity use  | kWh/month             | Monthly during construction       | Electricity meter / utility bill | Contractor        | Monthly ESMP report |
| Major material use            | ton or m <sup>3</sup> | Monthly / per procurement package | BOQ and procurement record       | Contractor        | Monthly ESMP report |
| Construction waste generation | ton or m <sup>3</sup> | Monthly                           | Waste log and disposal manifest  | Contractor        | Monthly ESMP report |

| Parameter                     | Unit                         | Frequency                    | Method / Source of Data    | Responsible Party              | Reporting                     |
|-------------------------------|------------------------------|------------------------------|----------------------------|--------------------------------|-------------------------------|
| Operational electricity use   | kWh/month                    | Monthly                      | PLN bill / meter reading   | Hospital Management / IPSRS    | Annual report GHG             |
| Diesel generator use          | liter/month; operating hours | Monthly                      | Generator logbook          | IPSRS                          | Annual report GHG             |
| Refrigerant top-up / leakage  | kg/year                      | Annual or during maintenance | HVAC service record        | IPSRS / HVAC Contractor        | Annual report GHG             |
| Water consumption             | m <sup>3</sup> /month        | Monthly                      | Water meter / utility bill | IPSRS                          | Annual report GHG             |
| Wastewater volume             | m <sup>3</sup> /month        | Monthly                      | WWTP record                | WWTP Operator                  | Annual report GHG             |
| Medical waste generation      | kg or ton/month              | Monthly                      | Waste manifest             | Sanitation Unit                | Annual report GHG             |
| Domestic waste generation     | kg or ton/month              | Monthly                      | Waste record               | Sanitation Unit                | Annual report GHG             |
| Total estimated GHG emissions | tCO <sub>2</sub> e/year      | Annual                       | GHG calculation worksheet  | Hospital Management / E&S Team | Annual ESMP monitoring report |

### 9.3.5 Summary

The climate change and GHG assessment framework for the RSMM development is summarized in Figure 10-1. The framework shows the overall process, starting from project data and climate inputs, followed by climate and GHG screening, identification of key risks, assessment of potential impacts, selection of adaptation and mitigation measures, and monitoring for continuous improvement.



Figure 9.1. Climate Change and GHG Assessment Framework for RSMM Development

The climate risk analysis indicates that RSMM is exposed to both current physical hazards and future climate risks. The most significant current hazard is earthquake risk, which is classified as high under both bedrock and local soil conditions. For future climate conditions, drought and heat waves are the most important risks, increasing from significant levels in 2030 to extreme levels by 2050 and 2085. Extreme precipitation remains generally low in the future screening, but drainage and runoff management remain important due to Bogor's high rainfall context and the need to maintain uninterrupted hospital services.

The GHG assessment estimates existing operational emissions at approximately **1,841 tCO<sub>2</sub>e/year**. Under the Business-as-Usual (BAU) scenario, emissions are projected to increase to **6,458 tCO<sub>2</sub>e/year**, while implementation of the proposed Green Building measures is expected to reduce operational emissions to approximately **4,843 tCO<sub>2</sub>e/year** (25%

reduction). Construction-phase emissions are estimated at approximately **113,711 tCO<sub>2</sub>e**, primarily from the embodied carbon of construction materials.

To address these risks and emissions, the Project will integrate climate-resilient design, seismic safety, water efficiency, drainage management, efficient HVAC, renewable energy opportunities, low-carbon materials, green open space, and systematic climate and GHG monitoring. These measures will support RSMM's role as a resilient, sustainable, and reliable healthcare facility under current and future climate conditions.

## **10 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

### **10.1 Environmental and Social Impacts Management Measures**

This section presents the Environmental and Social Impact Management Measures developed to avoid, minimize, mitigate, and manage the environmental and social risks and impacts identified through the ESIA process. The proposed measures have been prepared in accordance with applicable Indonesian regulations, the AIIB Environmental and Social Framework (ESF), and Good International Industry Practice (GIIP).

The management measures are intended to ensure that environmental and social considerations are integrated into project planning, construction, operation, and post-operation activities. The measures cover environmental quality management, occupational health and safety, community health and safety, stakeholder engagement, labor and working conditions, traffic management, waste management, biodiversity protection, climate resilience, and cultural heritage preservation.

The management measures presented in this section are organized according to the project lifecycle, including pre-construction, construction, operation, and post-operation stages. These measures will serve as the basis for the implementation of environmental and social commitments throughout the Project.

#### **10.1.1 Pre-Construction Stage Environmental and Social Management Measures**

The pre-construction stage primarily involves project planning, stakeholder engagement, permitting processes, detailed engineering design, and preparatory activities. Environmental and social management during this stage focuses on preventing future impacts through early planning, stakeholder engagement, integration of environmental and social considerations into project design, and protection of potential cultural heritage assets identified within the RSMM complex.

**Table 10.1. Environmental and Social Management Measures for Pre-Construction Stage**

| E&S Risks and Impacts                                                  | Project Activities that Cause Risks / Impacts | Nature and Duration of Risks / Impacts                                                                                       | Receptor Sensitivity                                                     | Proposed Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                   | Responsibility | Estimated Cost* |
|------------------------------------------------------------------------|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------|
| Community concerns and misinformation regarding project development    | Planning and permitting                       | Temporary social impact during project preparation due to uncertainty regarding project implementation and potential impacts | Nearby residents, RW representatives, community leaders                  | <ul style="list-style-type: none"> <li>• Conduct regular stakeholder consultations and information disclosure activities.</li> <li>• Provide clear information regarding project scope, schedule, anticipated impacts and mitigation measures.</li> <li>• Establish and communicate a project-level Grievance Redress Mechanism (GRM).</li> <li>• Record, respond to and monitor community feedback and grievances.</li> </ul> | RSMM           | IDR 75,000,000  |
| Exclusion of vulnerable groups from consultation processes             | Planning and permitting                       | Temporary social risk during planning phase                                                                                  | Women, elderly persons, persons with disabilities, low-income households | <ul style="list-style-type: none"> <li>• Ensure meaningful participation of vulnerable groups during consultation activities.</li> <li>• Provide accessible consultation venues and communication methods.</li> <li>• Maintain records of stakeholder representation and participation.</li> </ul>                                                                                                                             | RSMM           | IDR 75,000,000  |
| Occupational health and safety risks during surveys and investigations | Planning and permitting                       | Temporary impact limited to survey period                                                                                    | Survey personnel, contractors                                            | <ul style="list-style-type: none"> <li>• Implement OHS procedures for survey activities, including safety briefings, risk assessments, use of appropriate PPE, safe</li> </ul>                                                                                                                                                                                                                                                 | RSMM           | IDR 50,000,000  |

| E&S Risks and Impacts                                                  | Project Activities that Cause Risks / Impacts | Nature and Duration of Risks / Impacts                                                                                             | Receptor Sensitivity                                   | Proposed Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                                                       | Responsibility          | Estimated Cost*                               |
|------------------------------------------------------------------------|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------------------------------|
|                                                                        |                                               |                                                                                                                                    |                                                        | access arrangements, emergency preparedness. <ul style="list-style-type: none"> <li>• Coordination with RSMM management for activities undertaken within operational hospital areas.</li> </ul>                                                                                                                                                                                                                                                                    |                         |                                               |
| Inadequate consideration of Cultural Heritage values in project design | Planning and permitting                       | Long-term risk if heritage values are not adequately considered during project design                                              | ODCB elements, heritage authorities, local communities | <ul style="list-style-type: none"> <li>• Undertake detailed documentation and inventory of buildings and landscape elements identified as ODCB.</li> <li>• Continue coordination with the Department of Tourism and Culture and the Cultural Heritage Expert Team (TACB).</li> <li>• Integrate heritage-sensitive design principles into project planning.</li> <li>• Develop a Chance Find Procedure prior to commencement of construction activities.</li> </ul> | RSMM, Design Consultant | IDR 50,000,000 (or Included in Design Budget) |
| Inadequate consideration of protected flora in project design          | Planning and permitting                       | The presence of protected flora on hospital grounds, which may be disrupted during construction if not accounted for in the design | Protected flora species (Teak and Mahogany)            | <ul style="list-style-type: none"> <li>• Conduct inventory of protected flora species in the hospital ground, recording species name, conservation status (according to Indonesian and international regulations).</li> <li>• Include the presence of protected flora species in masterplan and/or design.</li> </ul>                                                                                                                                              | RSMM, Design Consultant | *Included in design budget                    |

| E&S Risks and Impacts | Project Activities that Cause Risks / Impacts | Nature and Duration of Risks / Impacts | Receptor Sensitivity | Proposed Mitigation Measures                                                                     | Responsibility | Estimated Cost* |
|-----------------------|-----------------------------------------------|----------------------------------------|----------------------|--------------------------------------------------------------------------------------------------|----------------|-----------------|
|                       |                                               |                                        |                      | <ul style="list-style-type: none"> <li>Prevention of cutting protected flora species.</li> </ul> |                |                 |

\* The estimated costs presented in this table are preliminary and indicative in nature. Actual costs may vary depending on final project design, implementation arrangements, market conditions, and contractor pricing, and will be further refined during subsequent stages of project development.

### **10.1.2 Construction Stage Environmental and Social Management Measures**

The construction stage has the greatest potential to generate environmental and social impacts due to earthworks, construction activities, worker mobilization, material transportation, and interaction with surrounding communities. Management measures focus on minimizing environmental disturbances, protecting community health and safety, preserving cultural heritage values, and ensuring compliance with applicable environmental and social requirements.

**Table 10.2. Environmental and Social Management Measures for Construction Stage**

| <b>E&amp;S Risks and Impacts</b>                               | <b>Project Activities that Cause Risks / Impacts</b>                                                                                                                                   | <b>Nature and Duration of Risks / Impacts</b>           | <b>Receptor Sensitivity</b>                   | <b>Proposed Mitigation Measures</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>Responsibility</b> | <b>Estimated Cost*</b> |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|
| <b>Dust emissions and deterioration of ambient air quality</b> | Mobilization of construction tools and material, Demolition of existing buildings, Disposal of demolition debris, Land preparation, and Construction of main and supporting facilities | Temporary adverse impact throughout construction period | Residents, patients, visitors, hospital staff | <ul style="list-style-type: none"> <li>• Conduct regular water spraying on exposed surfaces and access roads.</li> <li>• Cover trucks transporting friable materials.</li> <li>• Implement speed limits for construction vehicles.</li> <li>• Clean access roads affected by soil or material spillage.</li> </ul>                                                                                                                                                                                                                                                                    | Contractor            | IDR 75,000,000         |
| <b>Noise and vibration disturbance</b>                         | Mobilization, demolition, debris disposal, land preparation, construction activities                                                                                                   | Temporary adverse impact during construction period     | Residents, patients, visitors, hospital staff | <ul style="list-style-type: none"> <li>• Use low-noise and low-vibration construction equipment wherever technically and commercially feasible.</li> <li>• Maintain construction equipment regularly to minimize excessive noise and vibration emissions.</li> <li>• Restrict high-noise construction activities to daytime hours where feasible.</li> <li>• Install temporary noise barriers or acoustic screens where construction activities are undertaken close to sensitive receptors, if required.</li> <li>• Inform nearby communities and hospital departments in</li> </ul> | Contractor            | IDR 50,000,000         |

| E&S Risks and Impacts                                               | Project Activities that Cause Risks / Impacts                | Nature and Duration of Risks / Impacts                        | Receptor Sensitivity                     | Proposed Mitigation Measures                                                                                                                                                                                                                                                                                          | Responsibility | Estimated Cost* |
|---------------------------------------------------------------------|--------------------------------------------------------------|---------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------|
|                                                                     |                                                              |                                                               |                                          | <p>advance regarding major construction activities.</p> <ul style="list-style-type: none"> <li>Monitor noise and vibration levels where activities are conducted near sensitive receptors, including patient care areas and heritage buildings, and implement additional control measures where necessary.</li> </ul> |                |                 |
| <b>Increased runoff, sedimentation, and localized flooding risk</b> | Land preparation                                             | Temporary adverse impact, particularly during rainfall events | Nearby communities, drainage systems     | <ul style="list-style-type: none"> <li>Maintain temporary drainage systems throughout construction.</li> <li>Install sediment traps and erosion control measures.</li> <li>Conduct regular drainage inspections and cleaning.</li> <li>Ensure construction materials do not obstruct drainage channels.</li> </ul>    | Contractor     | IDR 50,000,000  |
| <b>Construction waste generation</b>                                | Demolition of existing buildings and construction activities | Temporary adverse impact throughout construction period       | Patients, hospital staff, waste handlers | <ul style="list-style-type: none"> <li>Segregate construction waste at source.</li> <li>Reuse and recycle materials where feasible.</li> <li>Store waste in designated collection areas.</li> <li>Dispose of waste through authorized service providers.</li> </ul>                                                   | Contractor     | IDR 50,000,000  |
| <b>Hazardous waste generation</b>                                   | Demolition of existing buildings and construction activities | Temporary adverse impact throughout construction period       | Patients, hospital staff, worker         | <ul style="list-style-type: none"> <li>Identify and segregate hazardous waste streams.</li> </ul>                                                                                                                                                                                                                     | Contractor     | IDR 75,000,000  |

| E&S Risks and Impacts                              | Project Activities that Cause Risks / Impacts | Nature and Duration of Risks / Impacts                                                                                                                                                                                                                                                                                  | Receptor Sensitivity                           | Proposed Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Responsibility | Estimated Cost*                                                                                                                                                                                                                                                                                        |
|----------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                    |                                               |                                                                                                                                                                                                                                                                                                                         |                                                | <ul style="list-style-type: none"> <li>Store hazardous waste in designated and secure storage areas.</li> <li>Handle, transport and dispose of hazardous waste through licensed contractors.</li> <li>Maintain hazardous waste records and manifests.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                  |                |                                                                                                                                                                                                                                                                                                        |
| <b>Asbestos-containing material (ACM) exposure</b> | Demolition of existing buildings              | Initial identification found corrugated asbestos roof, which categorized as non-friable asbestos-containing material. Non-friable asbestos-containing materials do not easily release into the air unless broken, cut, drilled, or weathered heavily. Release of ACM may happen temporary during demolition activities. | Construction workers, hospital staff, patients | <ul style="list-style-type: none"> <li>Conduct ACM handling in accordance to the Asbestos Management Plan Framework (Annex B), which key measures including:</li> <li>Conduct pre-demolition asbestos inspection, including lab testing for confirming asbestos material.</li> <li>Wetting asbestos-containing structures using water or water+surfactant mixture.</li> <li>Assign licensed asbestos abatement contractor for asbestos removal</li> <li>Provide PPE (respirators, coverall, and decontamination chambers) for workers handling asbestos removal.</li> <li>Install coverage around area during asbestos removal activity, provided with</li> </ul> | Contrator      | IDR 350.000.000 – 850.000.000<br>Breakdown: <ul style="list-style-type: none"> <li>Inspection &amp; Field Assessment: IDR 3.000.000 – 7.000.000</li> <li>Laboratory Analysis: IDR 5.000.000 – 12.000.000</li> <li>Abatement &amp; OHS Procedure for Asbestos: IDR 200.000.000 – 350.000.000</li> </ul> |

| E&S Risks and Impacts                           | Project Activities that Cause Risks / Impacts   | Nature and Duration of Risks / Impacts              | Receptor Sensitivity                        | Proposed Mitigation Measures                                                                                                                                                                                                                     | Responsibility | Estimated Cost*                                                                                                                               |
|-------------------------------------------------|-------------------------------------------------|-----------------------------------------------------|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
|                                                 |                                                 |                                                     |                                             | HEPA-filtered negative-pressure.<br>• Dispose ACM via licensed hazardous-waste transporter.                                                                                                                                                      |                | • Logistics, Transporter & Hazardous Waste Manifest = IDR 70.000.000<br>– 250.000.000<br>• Contingency (30%): IDR 70.000.000<br>– 200.000.000 |
| <b>Disturbance to flora and fauna</b>           | Land preparation and construction activities    | Temporary localized ecological disturbance          | Urban wildlife species                      | • Minimize vegetation clearing to the extent practicable.<br>• Restrict activities to designated work areas.<br>• Prohibit hunting, capturing or disturbing wildlife.<br>• Restore disturbed areas following completion of works where feasible. | Contractor     | IDR 10,000,000                                                                                                                                |
| <b>Traffic congestion and road safety risks</b> | Mobilization of construction tools and material | Temporary adverse impact during construction period | Road users, pedestrians, nearby communities | • Develop and implement a Traffic Management Plan.<br>• Schedule material transport during off-peak hours and provide traffic escort for                                                                                                         | Contractor     | IDR 50,000,000                                                                                                                                |

| E&S Risks and Impacts                    | Project Activities that Cause Risks / Impacts                                        | Nature and Duration of Risks / Impacts | Receptor Sensitivity                         | Proposed Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Responsibility   | Estimated Cost* |
|------------------------------------------|--------------------------------------------------------------------------------------|----------------------------------------|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|
|                                          |                                                                                      |                                        |                                              | <p>oversized or heavy equipment deliveries.</p> <ul style="list-style-type: none"> <li>• Deploy traffic marshals to supervise project activities and safely manage construction vehicle movements.</li> <li>• Provide designated stockpile and laydown areas within the project site for construction materials and equipment.</li> <li>• Clean construction vehicles before exiting the site to prevent mud and material spills onto public roads.</li> <li>• Provide physical barriers and clearly marked pedestrian walkways to separate pedestrians from construction activities.</li> <li>• Install adequate temporary lighting to ensure safe working conditions and visibility around the project sites.</li> </ul> |                  |                 |
| <b>Community health and safety risks</b> | Mobilization, demolition, debris disposal, land preparation, construction activities | Temporary adverse social impact        | Patients, visitors, hospital staff, resident | <ul style="list-style-type: none"> <li>• Secure construction areas through fencing and controlled access.</li> <li>• Install warning signage around work areas.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Contractor, RSMM | IDR 50,000,000  |

| E&S Risks and Impacts                       | Project Activities that Cause Risks / Impacts         | Nature and Duration of Risks / Impacts                                   | Receptor Sensitivity              | Proposed Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Responsibility | Estimated Cost* |
|---------------------------------------------|-------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------|
|                                             |                                                       |                                                                          |                                   | <ul style="list-style-type: none"> <li>• Maintain emergency preparedness and response procedures.</li> <li>• Operate an accessible community grievance mechanism.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                |                 |
| <b>Occupational health and safety risks</b> | Demolition, land preparation, construction activities | Temporary occupational and labor related risk during construction period | Construction workers, contractors | <ul style="list-style-type: none"> <li>• Implement a Construction Occupational Health and Safety Plan (OHS Plan) as part of the CESMP.</li> <li>• Prepare and implement Safe Work Procedures (SWPs) for electrical works, hot work, confined space entry, excavation, lifting operations, and heavy equipment activities.</li> <li>• Conduct Job Safety Analysis (JSA) and Permit-to-Work (PTW) for all high-risk activities.</li> <li>• Provide appropriate PPE to all workers and ensure its proper use.</li> <li>• Conduct regular toolbox meetings and safety training.</li> <li>• Investigate and report incidents and near misses and implement corrective actions.</li> <li>• Require the Contractor to prepare and implement, as part of the CESMP, a</li> </ul> | Contractor     | IDR 75,000,000  |

| E&S Risks and Impacts | Project Activities that Cause Risks / Impacts | Nature and Duration of Risks / Impacts | Receptor Sensitivity | Proposed Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Responsibility | Estimated Cost* |
|-----------------------|-----------------------------------------------|----------------------------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------|
|                       |                                               |                                        |                      | <p>Working at Heights and Scaffolding Safety Procedure (or SOP), including requirements for scaffold design, inspection, erection and dismantling, competent personnel, fall protection systems, work permits, and routine supervision.</p> <ul style="list-style-type: none"> <li>• Ensure scaffolding is inspected by a competent person before first use and at regular intervals during construction.</li> <li>• Implement Labor Management Procedures (LMP) covering fair recruitment, equal opportunity, prohibition of child and forced labour, compliance with working hours, wages, worker welfare facilities, and non-discrimination.</li> <li>• Establish and maintain a Worker Grievance Mechanism integrated with the Project-level GRM.</li> <li>• Implement and enforce the Worker Code of Conduct, including provisions on respectful behaviour, safeguarding, and prevention of GBV/SEA/SH</li> </ul> |                |                 |

| E&S Risks and Impacts                                               | Project Activities that Cause Risks / Impacts                | Nature and Duration of Risks / Impacts | Receptor Sensitivity                                                  | Proposed Mitigation Measures                                                                                                                                                                                                                                                                                                                      | Responsibility                      | Estimated Cost* |
|---------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------|
|                                                                     |                                                              |                                        |                                                                       | <p>within the hospital environment.</p> <ul style="list-style-type: none"> <li>• Provide adequate worker welfare facilities, including separate sanitation facilities for male and female workers, drinking water, rest areas, and accommodation (where applicable).</li> </ul>                                                                   |                                     |                 |
| <b>Local employment and business opportunities</b>                  | Construction labor recruitment                               | Temporary beneficial impact            | Local workforce, SMEs/UMKM, local vendors                             | <ul style="list-style-type: none"> <li>• Prioritize local recruitment where qualifications are available</li> <li>• Encourage procurement of goods and services from local suppliers where feasible.</li> <li>• Maintain transparent recruitment procedures.</li> </ul>                                                                           | Contractor, RSMM                    | IDR 25,000,000  |
| <b>Physical damage to potential Cultural Heritage assets (ODCB)</b> | Demolition of existing buildings and construction activities | Potential long-term adverse impact     | ODCB buildings, heritage features, local communities, TACB, Disparbud | <ul style="list-style-type: none"> <li>• Establish protective buffer zones around identified heritage assets.</li> <li>• Prohibit activities that may directly damage heritage structures.</li> <li>• Monitor the condition of heritage assets during construction.</li> <li>• Coordinate with relevant cultural heritage authorities.</li> </ul> | Contractor, RSMM                    | IDR 50,000,000  |
| <b>Alteration of historical architectural character</b>             | Construction of main and supporting facilities               | Long-term adverse impact               | Heritage buildings, local communities,                                | <ul style="list-style-type: none"> <li>• Apply heritage-sensitive design principles.</li> </ul>                                                                                                                                                                                                                                                   | RSMM, Design Consultant, Contractor | IDR 30,000,000  |

| E&S Risks and Impacts                                                                                                                 | Project Activities that Cause Risks / Impacts                                                                                     | Nature and Duration of Risks / Impacts                                        | Receptor Sensitivity                                        | Proposed Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                                                     | Responsibility                                | Estimated Cost* |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------|
|                                                                                                                                       |                                                                                                                                   |                                                                               | cultural authorities                                        | <ul style="list-style-type: none"> <li>• Ensure compatibility of new structures with surrounding heritage context.</li> <li>• Consult relevant cultural heritage authorities regarding design modifications affecting heritage values.</li> </ul>                                                                                                                                                                                                                |                                               |                 |
| <b>Chance discovery of undocumented heritage features</b>                                                                             | Demolition and land preparation                                                                                                   | Temporary but potentially significant impact                                  | Cultural heritage resources, project proponent, authorities | <ul style="list-style-type: none"> <li>• Implement a Chance Find Procedure.</li> <li>• Suspend work immediately upon discovery of potential heritage materials.</li> <li>• Notify relevant authorities and obtain guidance before resuming work.</li> <li>• Document and protect discovered items or features.</li> </ul>                                                                                                                                        | Contractor, RSMM                              | IDR 25,000,000  |
| <b>Risks associated with relocation of hospital services, patient movement, and continued hospital operations during construction</b> | Phased demolition, relocation of hospital services, movement of patients, medical equipment, and staff within the active hospital | Temporary adverse impact during phased construction and relocation activities | Patients, visitors, healthcare workers, hospital staff      | <ul style="list-style-type: none"> <li>• Prepare and implement a Hospital Relocation and Transition Plan prior to each relocation phase.</li> <li>• Prior to commencement of construction, RSMM shall review relevant hospital operational SOPs governing patient transfer, psychiatric care, emergency response, accessibility, and continuity of healthcare services to ensure that they remain suitable during phased construction and continue to</li> </ul> | RSMM, PMU, Contractor, Supervising Consultant | IDR 75,000,000  |

| E&S Risks and Impacts | Project Activities that Cause Risks / Impacts | Nature and Duration of Risks / Impacts | Receptor Sensitivity | Proposed Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Responsibility | Estimated Cost* |
|-----------------------|-----------------------------------------------|----------------------------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------|
|                       |                                               |                                        |                      | <p>provide inclusive services for persons with mental disabilities and other vulnerable groups.</p> <ul style="list-style-type: none"> <li>• Conduct relocation activities in a phased manner to maintain continuity of essential healthcare services.</li> <li>• Establish safe and clearly segregated routes for patients, visitors, emergency vehicles, and construction traffic.</li> <li>• Coordinate relocation schedules with hospital departments to minimize disruption to medical services.</li> <li>• Provide advance notification to patients, staff, visitors, and emergency service providers regarding relocation activities and temporary access changes.</li> <li>• Ensure uninterrupted access for emergency services, ambulances, and critical care units at all times.</li> <li>• Deploy additional personnel to assist patient movement and wayfinding during relocation periods.</li> </ul> |                |                 |

| E&S Risks and Impacts                                                                    | Project Activities that Cause Risks / Impacts                                                                        | Nature and Duration of Risks / Impacts       | Receptor Sensitivity                                                         | Proposed Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Responsibility                           | Estimated Cost* |
|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------|------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------------|
|                                                                                          |                                                                                                                      |                                              |                                                                              | <ul style="list-style-type: none"> <li>Monitor patient safety incidents and service disruptions throughout the relocation process and implement corrective actions where necessary.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                          |                 |
| <b>Disruption to critical hospital utility services and environmental infrastructure</b> | Demolition, utility relocation, excavation, tie-in works, and construction activities near existing utility networks | Temporary adverse impact during construction | Patients, hospital staff, visitors, healthcare services, hospital facilities | <ul style="list-style-type: none"> <li>Prepare and implement a Utility Relocation and Service Continuity Plan before construction activities affecting existing utilities.</li> <li>Identify and map all existing utility networks prior to excavation and demolition.</li> <li>Coordinate planned utility interruptions with hospital management and relevant service providers.</li> <li>Schedule utility tie-in works during periods of minimal hospital activity where feasible.</li> <li>Maintain uninterrupted operation of critical facilities, including electrical supply, water supply, WWTP, TPS LB3, medical gas systems, emergency generators, and fire protection systems.</li> <li>Provide temporary utility connections or backup systems where service interruptions cannot be avoided.</li> </ul> | Contractor, RSMM, Supervising Consultant | IDR 75,000,000  |

| E&S Risks and Impacts                                                                                                                                                            | Project Activities that Cause Risks / Impacts                                                                                                     | Nature and Duration of Risks / Impacts       | Receptor Sensitivity                                                                                                                           | Proposed Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Responsibility                                                                        | Estimated Cost* |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------|
|                                                                                                                                                                                  |                                                                                                                                                   |                                              |                                                                                                                                                | <ul style="list-style-type: none"> <li>Notify hospital departments in advance of any planned utility shutdowns.</li> <li>Monitor utility performance during construction and promptly restore any disrupted services.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                       |                 |
| <b>Risk of Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA), Sexual Harassment (SH), and inappropriate interaction involving vulnerable psychiatric patients</b> | Establishment and operation of workers' basecamp and laydown area within the RSMM hospital compound adjacent to psychiatric inpatient facilities. | Temporary adverse impact during construction | psychiatric inpatients, particularly female patients and patients with reduced decision-making capacity; caregivers; hospital staff; visitors) | <ul style="list-style-type: none"> <li>Prepare and implement a Project-specific GBV/SEA/SH Prevention and Response Plan prior to mobilization.</li> <li>Develop and enforce a Worker Code of Conduct covering GBV/SEA/SH prevention, respectful behaviour, and disciplinary sanctions.</li> <li>Conduct mandatory induction and periodic refresher training on GBV/SEA/SH, professional ethics, and safeguarding of vulnerable persons.</li> <li>Restrict worker access to hospital operational areas and psychiatric wards through controlled entry points, fencing, and security personnel.</li> <li>Provide adequate lighting, CCTV surveillance, and access control around</li> </ul> | Contractor Construction Supervision Consultant RSMM Project Implementation Unit (PIU) | IDR 75,000,000  |

| E&S Risks and Impacts                                                                        | Project Activities that Cause Risks / Impacts                                       | Nature and Duration of Risks / Impacts                                                                                                       | Receptor Sensitivity                                                                       | Proposed Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Responsibility                                          | Estimated Cost* |
|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|-----------------|
|                                                                                              |                                                                                     |                                                                                                                                              |                                                                                            | <p>worker accommodation and laydown areas.</p> <ul style="list-style-type: none"> <li>• Establish confidential, survivor-centred grievance and reporting mechanisms accessible to patients, caregivers, visitors, and hospital staff.</li> <li>• Coordinate routinely with RSMM management and hospital security regarding worker conduct and site access arrangements.</li> <li>• Immediately investigate all reported incidents and apply disciplinary actions in accordance with Contractor policies and applicable regulations.</li> <li>• Display awareness materials on appropriate worker behaviour and available reporting channels at worker accommodation and construction areas.</li> </ul> |                                                         |                 |
| <b>Temporary economic displacement and disruption of livelihoods of commercial tenants**</b> | Demolition of existing buildings and Construction of main and supporting facilities | Construction activities may require the temporary relocation of commercial tenants operating within the RSMM compound, potentially resulting | commercial tenants, cooperative operators, workers employed by the tenants, Kafe Kepompong | <ul style="list-style-type: none"> <li>• Prepare, update, and implement the Commercial Tenant Relocation and Livelihood Restoration Plan (Annex G) prior to relocation activities, including tenant-specific verification of tenancy arrangements,</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                          | RSMM PIU Contractor Construction Supervision Consultant | IDR 75,000,000  |

| E&S Risks and Impacts | Project Activities that Cause Risks / Impacts | Nature and Duration of Risks / Impacts                                                                                                                                                                                                                          | Receptor Sensitivity                                                            | Proposed Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Responsibility | Estimated Cost* |
|-----------------------|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------|
|                       |                                               | in temporary interruption of business operations, reduced customer access, and loss of income. The impact is expected to be temporary during the construction period, provided that appropriate relocation and livelihood restoration measures are implemented. | rehabilitation programme, hospital staff and visitors relying on these services | <p>business conditions, and potential livelihood impacts.</p> <ul style="list-style-type: none"> <li>• Verify and document the contractual status of each affected tenant, including remaining contract period, rental deposits, prepaid rental periods, and eligible tenant-funded assets or improvements, as applicable.</li> <li>• Assess tenant-specific livelihood impacts and determine appropriate relocation, transitional, or financial assistance measures in consultation with affected tenants.</li> <li>• Where applicable, provide reimbursement, compensation, or other agreed arrangements for eligible losses associated with Project-related relocation, consistent with applicable contractual arrangements and AIIB requirements.</li> <li>• Ensure that affected tenants are provided with reasonable advance notice and that agreed relocation arrangements are established before the</li> </ul> |                |                 |

| E&S Risks and Impacts | Project Activities that Cause Risks / Impacts | Nature and Duration of Risks / Impacts | Receptor Sensitivity | Proposed Mitigation Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Responsibility | Estimated Cost* |
|-----------------------|-----------------------------------------------|----------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------|
|                       |                                               |                                        |                      | <p>affected premises are vacated.</p> <ul style="list-style-type: none"> <li>• Restore tenant operations in permanent facilities following completion of construction, where applicable.</li> <li>• Establish and maintain an accessible grievance mechanism to address tenant concerns throughout relocation and construction.</li> <li>• Monitor business recovery following relocation and implement additional support measures where significant livelihood impacts are identified.</li> </ul> |                |                 |

\* Estimated costs presented in this table are preliminary and indicative in nature. Actual costs may vary depending on final project design, implementation arrangements, market conditions, and contractor pricing, and will be refined during subsequent stages of project development.

\*\* Where temporary relocation of commercial tenants is required during construction, relocation and livelihood restoration measures shall be implemented in accordance with the Commercial Tenant Relocation and Livelihood Restoration Framework presented in Annex F. The Framework has been developed in accordance with the principles of AIIB Environmental and Social Standard (ESS) 2 on Involuntary Resettlement and Economic Displacement.

### **10.1.3 Operation Stage Environmental and Social Management Measures**

The operation stage is expected to generate substantial social benefits through improved healthcare services and employment opportunities. However, operational activities may also result in increased wastewater generation, healthcare waste generation, traffic volume, and ongoing requirements for cultural heritage management.

**Table 10.3. Environmental and Social Management Measures for Operational Stage**

| <b>E&amp;S Risks and Impacts</b>                      | <b>Project Activities that Cause Risks / Impacts</b> | <b>Nature and Duration of Risks / Impacts</b> | <b>Receptor Sensitivity</b>          | <b>Proposed Mitigation / Enhancement Measures</b>                                                                                                                                                                                                                                                                                | <b>Responsibility</b> | <b>Estimated Cost*</b> |
|-------------------------------------------------------|------------------------------------------------------|-----------------------------------------------|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|
| <b>Improved healthcare access and service quality</b> | Hospital operation and maintenance                   | Long-term beneficial impact                   | Patients and surrounding communities | <ul style="list-style-type: none"> <li>• Maintain adequate staffing levels and healthcare resources.</li> <li>• Monitor service quality and patient satisfaction.</li> <li>• Continuously improve healthcare service delivery.</li> <li>• Maintain accessibility for vulnerable groups and persons with disabilities.</li> </ul> | RSMM                  | IDR 50,000,000         |
| <b>Increased employment opportunities</b>             | Operational labor recruitment                        | Long-term beneficial impact                   | Local workforce                      | <ul style="list-style-type: none"> <li>• Prioritize recruitment of qualified local workers where feasible.</li> <li>• Promote equal employment opportunities.</li> <li>• Provide employee training and capacity-building programs.</li> <li>• Maintain transparent recruitment procedures.</li> </ul>                            | RSMM                  | IDR 25,000,000         |
| <b>Healthcare waste generation</b>                    | Hospital operation and maintenance                   | Long-term environmental impact                | Workers, waste handlers              | <ul style="list-style-type: none"> <li>• Segregate waste at source.</li> <li>• Store hazardous and infectious waste in compliant facilities.</li> <li>• Use licensed waste management contractors.</li> <li>• Maintain waste tracking and reporting systems.</li> <li>• Conduct periodic waste management audits.</li> </ul>     | RSMM                  | IDR 100,000,000        |

| E&S Risks and Impacts        | Project Activities that Cause Risks / Impacts                                                               | Nature and Duration of Risks / Impacts                                                                                      | Receptor Sensitivity                       | Proposed Mitigation / Enhancement Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Responsibility | Estimated Cost* |
|------------------------------|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------|
| <b>Radiation exposure</b>    | Hospital operation and maintenance (Use of medical equipment with radiation properties, e.g. X-Ray Machine) | Use of medical equipments with radiation exposure potential may cause health problems if exposure is not managed. Long-term | Patients, Hospital Workers, Waste Handlers | <ul style="list-style-type: none"> <li>Limit exposure of radiation material/procedure, such as making sure X-Ray is only taken once/as minimum necessary per patient procedure;</li> <li>Use of protective gear, both for hospital workers and for patients. Protective gear includes lead (Pb) layer with suitable thickness (0.25 mm minimum for diagnostic radiology);</li> </ul> <p>Implement hospital SOPs regarding radioactive exposure handling, including:</p> <ul style="list-style-type: none"> <li>SOP regarding Use of Personal Protective Equipment (PPE) for Radiology Patients;</li> <li>SOP regarding Use of Screens for Mobile X-Ray Machine</li> </ul> | RSMM           | IDR 25,000,000  |
| <b>Wastewater generation</b> | Hospital operation and maintenance                                                                          | Long-term environmental impact                                                                                              | Green open space                           | <ul style="list-style-type: none"> <li>Operate and maintain wastewater treatment facilities in accordance with regulatory requirements.</li> <li>Conduct routine effluent quality monitoring.</li> <li>Implement corrective actions when exceedances occur.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                    | RSMM           | IDR 75,000,000  |

| E&S Risks and Impacts           | Project Activities that Cause Risks / Impacts | Nature and Duration of Risks / Impacts | Receptor Sensitivity           | Proposed Mitigation / Enhancement Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Responsibility | Estimated Cost* |
|---------------------------------|-----------------------------------------------|----------------------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------|
|                                 |                                               |                                        |                                | <ul style="list-style-type: none"> <li>• Maintain monitoring records.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                |                 |
| <b>Increased traffic volume</b> | Hospital operation and maintenance            | Long-term social impact                | Road users, nearby communities | <ul style="list-style-type: none"> <li>• Install and maintain traffic signs within the hospital area.</li> <li>• Maintain a security post staffed by trained security personnel to control site access and manage vehicle movements.</li> <li>• Provide separate access gates for motorcycles and cars with adequate turning radii and entrance widths to ensure safe and efficient traffic flow.</li> <li>• Install adequate street lighting at key access points and operational areas to improve visibility and safety.</li> <li>• Cover drainage crossings with steel grates and maintain drainage systems to ensure safe access and proper stormwater flow.</li> <li>• Install traffic calming and pedestrian safety measures, including rumble strips, zebra crossings, and warning lights at the main hospital entrance.</li> </ul> | RSMM           | IDR 50,000,000  |

| E&S Risks and Impacts                                                                                           | Project Activities that Cause Risks / Impacts | Nature and Duration of Risks / Impacts | Receptor Sensitivity                                                                       | Proposed Mitigation / Enhancement Measures                                                                                                                                                                                                                                                                                  | Responsibility | Estimated Cost* |
|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------|----------------------------------------|--------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------|
| <b>Occupational health and safety risks</b>                                                                     | Hospital operation and maintenance            | Long-term occupational risk            | Healthcare workers                                                                         | <ul style="list-style-type: none"> <li>Implement an Occupational Health and Safety (OHS) Management System.</li> <li>Provide appropriate PPE and occupational health monitoring.</li> <li>Conduct regular OHS training and emergency response drills.</li> <li>Investigate and report incidents and near misses.</li> </ul> | RSMM           | IDR 75,000,000  |
| <b>Community health and safety risks</b>                                                                        | Hospital operation and maintenance            | Long-term social risk                  | Communities, visitors                                                                      | <ul style="list-style-type: none"> <li>Maintain emergency preparedness and response procedures.</li> <li>Ensure safe management and transportation of healthcare waste.</li> <li>Maintain security and access control measures.</li> <li>Operate and maintain a community grievance mechanism.</li> </ul>                   | RSMM           | IDR 50,000,000  |
| <b>Risk of exclusion or unequal access for vulnerable patients, including patients with mental disabilities</b> | Hospital operation and maintenance            | Long-term social risk                  | Patients with mental disabilities, persons with disabilities, elderly patients, caregivers | <ul style="list-style-type: none"> <li>Implement and periodically review hospital SOPs for admission, referral, patient transfer, treatment, and discharge to ensure they are consistent with national regulations and international good practice, including the principles of the UN Convention on the</li> </ul>         | RSMM           | IDR 100,000,000 |

| E&S Risks and Impacts | Project Activities that Cause Risks / Impacts | Nature and Duration of Risks / Impacts | Receptor Sensitivity | Proposed Mitigation / Enhancement Measures                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Responsibility | Estimated Cost* |
|-----------------------|-----------------------------------------------|----------------------------------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------|
|                       |                                               |                                        |                      | <p>Rights of Persons with Disabilities (CRPD).</p> <ul style="list-style-type: none"> <li>• Ensure equitable and non-discriminatory access to healthcare services for all patients, including persons with mental disabilities, women, children, older persons, and persons with disabilities.</li> <li>• Provide reasonable accommodation, accessible information, and assistance for vulnerable patients where required.</li> <li>• Train healthcare workers, security personnel, and support staff on disability inclusion, patient rights, safeguarding, respectful communication, informed consent, and non-discrimination.</li> <li>• Maintain patient privacy, dignity, and confidentiality throughout service delivery.</li> <li>• Operate an accessible grievance mechanism that enables vulnerable patients and caregivers to submit complaints through multiple channels, including assistance for patients</li> </ul> |                |                 |

| E&S Risks and Impacts                                         | Project Activities that Cause Risks / Impacts | Nature and Duration of Risks / Impacts | Receptor Sensitivity                                                                           | Proposed Mitigation / Enhancement Measures                                                                                                                                                                                                                                                                                                                                                     | Responsibility | Estimated Cost* |
|---------------------------------------------------------------|-----------------------------------------------|----------------------------------------|------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|-----------------|
|                                                               |                                               |                                        |                                                                                                | unable to submit complaints independently. <ul style="list-style-type: none"> <li>Periodically review patient complaints and service performance to identify and address barriers affecting vulnerable groups</li> </ul>                                                                                                                                                                       |                |                 |
| <b>Increased consumption of water and energy resources</b>    | Hospital operation and maintenance            | Long-term resource consumption impact  | Utility providers, environment                                                                 | <ul style="list-style-type: none"> <li>Implement water and energy conservation measures.</li> <li>Monitor utility consumption regularly.</li> <li>Promote efficient use of utilities by staff and visitors.</li> <li>Maintain utility infrastructure to minimize losses and leakages.</li> </ul>                                                                                               | RSMM           | IDR 50,000,000  |
| <b>Preservation and promotion of cultural heritage values</b> | Hospital operation and maintenance            | Long-term beneficial impact            | Local communities, hospital visitors, cultural heritage stakeholders, educational institutions | <ul style="list-style-type: none"> <li>Retain and conserve the identified ODCB building.</li> <li>Maintain adaptive reuse as a heritage exhibition and information center.</li> <li>Preserve key architectural and historical attributes.</li> <li>Provide heritage interpretation materials and educational information.</li> <li>Conduct periodic inspections of heritage assets.</li> </ul> | RSMM           | IDR 50,000,000  |
|                                                               |                                               |                                        |                                                                                                | <ul style="list-style-type: none"> <li></li> </ul>                                                                                                                                                                                                                                                                                                                                             |                |                 |

\* The estimated costs presented in this table are preliminary and indicative in nature. Actual costs may vary depending on operational requirements, implementation arrangements, market conditions, and future budget allocations, and may be refined during subsequent stages of project operation and management.

## 10.2 Environmental and Social Monitoring Program

The Environmental and Social Monitoring Program has been developed to verify the effectiveness of the mitigation measures presented in Section 11.1 and to ensure that environmental and social risks and impacts are adequately managed throughout the Project lifecycle.

The monitoring program aims to:

- Verify compliance with applicable Indonesian regulations and AIB Environmental and Social Standards;
- Assess the effectiveness of mitigation measures implemented during each project phase;
- Identify any unforeseen environmental or social impacts requiring corrective actions;
- Support adaptive management and continuous improvement of environmental and social performance;
- Provide information for internal reporting and stakeholder communication.

Monitoring frequencies have been established based on the significance of identified risks and impacts, applicable requirements, and the practical implementation capacity of RSMM and its contractors. During construction phase, formal environmental monitoring (e.g., laboratory-based ambient air quality and noise monitoring) will generally be undertaken on a quarterly basis, unless otherwise required by applicable regulations or project-specific commitments. In addition, routine site inspections and operational monitoring of high-sensitivity parameters, particularly construction dust and noise in areas adjacent to active hospital services, will be conducted on a more frequent basis (e.g., daily or weekly, as appropriate) to enable timely implementation of corrective actions where established trigger levels are exceeded. Operational monitoring records will be maintained by the Contractor and regularly reviewed by the Supervising Consultant and the Project Management Unit (PMU). During the operational phase, environmental and social monitoring will generally be undertaken on a semi-annual basis unless more frequent monitoring is required.

### 10.2.1 Pre-Construction Stage Monitoring Program

During the pre-construction stage, monitoring activities will focus on ensuring that key environmental and social commitments are integrated into project planning, design development, stakeholder engagement processes, and institutional arrangements. Particular attention will be given to stakeholder consultations, establishment of the project grievance mechanism, incorporation of environmental and social requirements into the detailed design, and verification of cultural heritage considerations associated with identified ODCB and

heritage-related assets within the RSMM complex. Monitoring during this stage aims to ensure that potential risks are adequately addressed prior to the commencement of construction activities.

**Table 10.4. Environmental and Social Monitoring Measures for Pre-Construction Stage**

| Key Risks & Impacts                                                           | Monitoring Parameters                                                                                                                                                                                                                                                                | Locations                                            | Measurements                                                                                               | Frequency                                          | Responsibilities        | Cost Estimate*             |
|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------------------------------------------------------------------|----------------------------------------------------|-------------------------|----------------------------|
| <b>Community concerns and misinformation regarding project development</b>    | <ul style="list-style-type: none"> <li>Number of consultation activities conducted;</li> <li>Number of participants;</li> <li>Number of grievances received and resolved;</li> <li>Information disclosure records</li> </ul>                                                         | Project area and surrounding communities             | Review of consultation records, attendance lists, GRM records, stakeholder feedback documentation          | Monthly during pre-construction phase              | RSMM                    | IDR 75,000,000             |
| <b>Exclusion of vulnerable groups from consultation processes</b>             | Participation of women, elderly persons, persons with disabilities, and vulnerable households in consultation activities                                                                                                                                                             | Consultation venues and surrounding communities      | Review of participant lists and stakeholder engagement records                                             | During each consultation activity                  | RSMM                    | IDR 75,000,000             |
| <b>Occupational health and safety risks during surveys and investigations</b> | <ul style="list-style-type: none"> <li>Number of safety briefings conducted;</li> <li>PPE compliance;</li> <li>Incidents, near misses, and accidents reported</li> </ul>                                                                                                             | Survey locations and investigation areas             | Site inspections; review of OHS records and incident reports                                               | Prior to and during survey activities              | RSMM, Survey Contractor | IDR 50,000,000             |
| <b>Inadequate consideration of Cultural Heritage values in project design</b> | <ul style="list-style-type: none"> <li>Completion of ODCB documentation and inventory;</li> <li>Evidence of consultation with cultural heritage authorities;</li> <li>Incorporation of heritage-sensitive design measures;</li> <li>Availability of Chance Find Procedure</li> </ul> | Project site and identified heritage-sensitive areas | Review of design documents, consultation records, inventory reports, and heritage management documentation | At key design milestones and prior to construction | RSMM, Design Consultant | IDR 50,000,000             |
| <b>Inadequate consideration of protected flora in project design</b>          | <ul style="list-style-type: none"> <li>Inclusion of preservation measures of protected flora species in project masterplan and/or DED</li> </ul>                                                                                                                                     | Project area                                         | Review of masterplan and/or DED to ensure preservation of                                                  | At key design milestones and prior to construction | RSMM, Design Consultant | *Included in design budget |

| Key Risks & Impacts | Monitoring Parameters | Locations | Measurements            | Frequency | Responsibilities | Cost Estimate* |
|---------------------|-----------------------|-----------|-------------------------|-----------|------------------|----------------|
|                     |                       |           | protected flora species |           |                  |                |

\* Cost estimates are preliminary and indicative only. Actual monitoring costs may vary depending on final project design, implementation arrangements, monitoring requirements, and contractor pricing, and may be refined during subsequent stages of project development.

### **10.2.2 Construction Stage Monitoring Program**

The construction stage represents the period with the highest potential for environmental and social impacts due to site preparation, civil works, material transportation, workforce mobilization, and construction-related activities. Monitoring during this stage will focus on verifying the effectiveness of mitigation measures related to air quality, noise, waste management, occupational health and safety, community health and safety, traffic management, stakeholder engagement, and protection of cultural heritage assets. Monitoring results will be used to identify non-compliance issues and implement corrective actions where necessary.

**Table 10.5. Environmental and Social Monitoring Measures for Construction Stage**

| Key Risks & Impacts                                                 | Monitoring Parameters                                                                                                                                | Locations                                                                                                                                     | Measurements                                                                                                                                                     | Frequency                            | Responsibilities | Cost Estimate* |
|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------|----------------|
| <b>Dust emissions and deterioration of ambient air quality</b>      | <ul style="list-style-type: none"> <li>Dust suppression implementation;</li> <li>Visible dust levels;</li> <li>Complaints related to dust</li> </ul> | Construction site, nearby sensitive receptors.<br>- UKG-1 : 6° 34' 57.498" S 106° 46' 58.715" E<br>- UKG-2 : 6° 34' 53.90" S 106° 47' 6.20" E | <ul style="list-style-type: none"> <li>Site inspections;</li> <li>Complaint records;</li> <li>Ambient air quality monitoring by accredited laboratory</li> </ul> | Daily visual inspection              | Contractor, RSMM | IDR 25,000,000 |
| <b>Noise and vibration disturbance</b>                              | <ul style="list-style-type: none"> <li>Noise levels;</li> <li>Implementation of working hour restrictions;</li> <li>Community complaints</li> </ul>  | Construction site, nearby sensitive receptors<br>- UKG-1 : 6° 34' 57.498" S 106° 46' 58.715" E<br>- UKG-2 : 6° 34' 53.90" S 106° 47' 6.20" E  | <ul style="list-style-type: none"> <li>Noise measurements;</li> <li>Site inspections;</li> <li>Complaint records</li> </ul>                                      | Daily observation during noisy works | Contractor, RSMM | IDR 15,000,000 |
| <b>Increased runoff, sedimentation, and localized flooding risk</b> | <ul style="list-style-type: none"> <li>Condition of drainage systems;</li> <li>Sediment accumulation;</li> <li>Erosion control measures</li> </ul>   | Construction areas, drainage channels, surrounding roads                                                                                      | <ul style="list-style-type: none"> <li>Site inspections;</li> <li>Drainage monitoring</li> </ul>                                                                 | Monthly                              | Contractor       | IDR 15,000,000 |
| <b>Construction waste generation</b>                                | <ul style="list-style-type: none"> <li>Volume of waste generated;</li> <li>Waste segregation practices;</li> <li>Waste disposal records</li> </ul>   | Construction site and temporary waste storage areas                                                                                           | <ul style="list-style-type: none"> <li>Site inspections;</li> <li>Waste manifests and disposal records</li> </ul>                                                | Monthly                              | Contractor       | IDR 50,000,000 |
| <b>Hazardous waste generation</b>                                   | <ul style="list-style-type: none"> <li>Hazardous waste storage conditions;</li> <li>Waste manifests;</li> </ul>                                      | Hazardous waste storage areas                                                                                                                 | <ul style="list-style-type: none"> <li>Site inspections;</li> <li>Document review</li> </ul>                                                                     | Monthly                              | Contractor       | IDR 75,000,000 |

| Key Risks & Impacts                                | Monitoring Parameters                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Locations                                                                                                                                                                                            | Measurements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Frequency                                                                                                                                                                                                                                                                                                                                                                 | Responsibilities                                                           | Cost Estimate*                                                                                                                                                                                                                                                                                                              |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                    | <ul style="list-style-type: none"> <li>Licensed disposal records</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                           |                                                                            |                                                                                                                                                                                                                                                                                                                             |
| <b>Asbestos-containing material (ACM) exposure</b> | <ul style="list-style-type: none"> <li>Fiber concentration (f/cm<sup>3</sup>)</li> <li>Differential pressure (<math>\geq -0.02</math> in. w.g or -5 Pa)</li> <li>Air exchange rate (min. 4-6 ACH)</li> <li>Coverage seal integrity &amp; airlock flap tension</li> <li>Workers compliance with Time-Weighted Average (TWA) of 8 hour (<math>\leq 0.1</math> f/cm<sup>3</sup>)</li> <li>Background airborne fiber concentration (<math>\leq 0.01</math> f/cm<sup>3</sup>/background limit)</li> <li>HEPA exhaust output air quality</li> <li>Material saturation/wet method</li> </ul> | <ul style="list-style-type: none"> <li>Demolition zones containing identified ACM</li> <li>HEPA-filtered negative-pressure enclosures</li> <li>Licensed hazardous waste disposal facility</li> </ul> | <ol style="list-style-type: none"> <li>Containment &amp; Negative Pressure Check <ul style="list-style-type: none"> <li>Negative pressure check using manometer / recorder</li> <li>Inspection of containment walls</li> <li>Logging pressure readings in containment record</li> </ul> </li> <li>Personal Air Sampling (Worker Exposure) <ul style="list-style-type: none"> <li>Equipment checking before activities</li> </ul> </li> <li>Perimeter &amp; Area Air Monitoring <ul style="list-style-type: none"> <li>Using HVAS</li> <li>Position pumps at fixed locations: HEPA exhaust, airlock entrance, and adjacent clean areas</li> <li>Run pumps during active removal hours</li> </ul> </li> </ol> | <ol style="list-style-type: none"> <li>Continuous (digital logger), with 2 times manual inspection daily</li> <li>Daily per job task/worker category</li> <li>Daily (During active removal/handling)</li> <li>Continuous during active work shifts</li> <li>Once (after fine cleaning, before air clearance)</li> <li>Once per completed containment enclosure</li> </ol> | <ul style="list-style-type: none"> <li>PIU</li> <li>Contractors</li> </ul> | <ol style="list-style-type: none"> <li>IDR 1.000.000 – 2.500.000 / day</li> <li>IDR 750.000 – 1.500.000 / sample</li> <li>IDR 2.500.000 – 6.000.000 / day (3-5 stations assumption)</li> <li>IDR 3.500.000 – 8.000.000 / day</li> <li>IDR 2.000.000 – 4.500.000 / inspection</li> <li>IDR 8.000.000 - 18.000.000</li> </ol> |

| Key Risks & Impacts | Monitoring Parameters | Locations | Measurements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Frequency | Responsibilities | Cost Estimate* |
|---------------------|-----------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------------|----------------|
|                     |                       |           | <ul style="list-style-type: none"> <li>Compare to background limits (&lt;0.01 f/cc)</li> </ul> <p>4. On-site Work Inspections</p> <ul style="list-style-type: none"> <li>Observation on workers compliance during ACM removal</li> <li>Verify ACM handling and bagging</li> </ul> <p>5. Post-Abatement Visual Clearance</p> <ul style="list-style-type: none"> <li>Inspection of completion by abatement contractor</li> </ul> <p>6. Final Air Clearance Testing</p> <ul style="list-style-type: none"> <li>Air samples collection using HVAS</li> <li>Testing samples Send in laboratory (PCM/TEM method)</li> <li>Containment removal only when results pass clearance standards</li> </ul> |           |                  |                |

| Key Risks & Impacts                                | Monitoring Parameters                                                                                                                                             | Locations                                               | Measurements                                                                                                                  | Frequency     | Responsibilities | Cost Estimate* |
|----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------|------------------|----------------|
| <b>Disturbance to flora and fauna</b>              | <ul style="list-style-type: none"> <li>Extent of vegetation disturbance;</li> <li>Evidence of wildlife disturbance;</li> <li>Site restoration progress</li> </ul> | Construction areas and adjacent green open spaces       | <ul style="list-style-type: none"> <li>Site inspections;</li> <li>Photographic documentation</li> </ul>                       | Semi-annually | Contractor       | IDR 10,000,000 |
| <b>Traffic congestion and road safety risks</b>    | <ul style="list-style-type: none"> <li>Traffic incidents;</li> <li>Implementation of traffic</li> <li>Management measures; traffic complaints</li> </ul>          | Site access roads and surrounding public roads          | <ul style="list-style-type: none"> <li>Traffic observations;</li> <li>Incident records;</li> <li>Complaint records</li> </ul> | Weekly        | Contractor       | IDR 50,000,000 |
| <b>Community health and safety risks</b>           | <ul style="list-style-type: none"> <li>Community complaints;</li> <li>Condition of fencing and warning signs;</li> <li>Incidents involving the public</li> </ul>  | Construction site boundary and surrounding communities  | <ul style="list-style-type: none"> <li>Site inspections;</li> <li>GRM records;</li> <li>Incident reports</li> </ul>           | Monthly       | Contractor, RSMM | IDR 50,000,000 |
| <b>Occupational health and safety risks</b>        | <ul style="list-style-type: none"> <li>PPE compliance;</li> <li>Toolbox meetings conducted;</li> <li>Incidents, near misses, and lost-time injuries</li> </ul>    | Construction site                                       | <ul style="list-style-type: none"> <li>Site inspections;</li> <li>OHS records;</li> <li>Incident reports</li> </ul>           | Monthly       | Contractor       | IDR 75,000,000 |
| <b>Local employment and business opportunities</b> | <ul style="list-style-type: none"> <li>Number of local workers employed;</li> <li>Procurement from local suppliers;</li> <li>Recruitment records</li> </ul>       | Project area                                            | Review of employment and procurement records                                                                                  | Quarterly     | Contractor, RSMM | IDR 25,000,000 |
| <b>Physical damage to potential</b>                | <ul style="list-style-type: none"> <li>Physical condition of heritage assets;</li> </ul>                                                                          | ODCB buildings and surrounding heritage-sensitive areas | <ul style="list-style-type: none"> <li>Visual inspections;</li> <li>Photographic documentation;</li> </ul>                    | Monthly       | Contractor, RSMM | IDR 50,000,000 |

| Key Risks & Impacts                                                                                                                   | Monitoring Parameters                                                                                                                                                                                                                                                                                                                               | Locations                                                                                                            | Measurements                                                                                                                                                                              | Frequency                                                                 | Responsibilities                              | Cost Estimate* |
|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------------|----------------|
| <b>Cultural Heritage assets (ODCB)</b>                                                                                                | <ul style="list-style-type: none"> <li>Integrity of protective buffer zones;</li> <li>Heritage-related incidents</li> </ul>                                                                                                                                                                                                                         |                                                                                                                      | <ul style="list-style-type: none"> <li>Consultation records</li> </ul>                                                                                                                    |                                                                           |                                               |                |
| <b>Alteration of historical architectural character</b>                                                                               | <ul style="list-style-type: none"> <li>Compliance with heritage-sensitive design requirements;</li> <li>Approval records from relevant authorities</li> </ul>                                                                                                                                                                                       | Heritage-sensitive project areas                                                                                     | <ul style="list-style-type: none"> <li>Design review;</li> <li>Site inspections;</li> <li>Consultation records</li> </ul>                                                                 | At key construction milestones                                            | RSMM, Design Consultant                       | IDR 25,000,000 |
| <b>Chance discovery of undocumented heritage features</b>                                                                             | <ul style="list-style-type: none"> <li>Number of chances find incidents;</li> <li>Implementation of Chance Find Procedure;</li> <li>Notifications to authorities</li> </ul>                                                                                                                                                                         | Excavation and demolition areas                                                                                      | <ul style="list-style-type: none"> <li>Incident records;</li> <li>Procedure implementation records</li> </ul>                                                                             | As required during excavation and demolition activities                   | Contractor, RSMM                              | IDR 25,000,000 |
| <b>Risks associated with relocation of hospital services, patient movement, and continued hospital operations during construction</b> | <ul style="list-style-type: none"> <li>Implementation of the Hospital Relocation and Transition Plan</li> <li>Continuity of critical healthcare services</li> <li>Number of patient safety incidents related to relocation</li> <li>Accessibility of patients, visitors, and emergency services</li> <li>Number of complaints related to</li> </ul> | Areas affected by phased relocation, patient circulation routes, hospital entrances, and temporary service locations | <ul style="list-style-type: none"> <li>Review of relocation records,</li> <li>site inspections,</li> <li>incident reports,</li> <li>patient feedback, and</li> <li>GRM records</li> </ul> | Weekly during relocation activities and after each major relocation phase | RSMM, PMU, Contractor, Supervising Consultant | IDR 25,000,000 |

| Key Risks & Impacts                                                                                                                                                              | Monitoring Parameters                                                                                                                                                                                                                                                                                                                                            | Locations                                                                                                                                                         | Measurements                                                                                                                                                                                                                                                                             | Frequency                                                                                   | Responsibilities                                                                        | Cost Estimate* |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|----------------|
|                                                                                                                                                                                  | relocation and hospital access                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                   |                                                                                                                                                                                                                                                                                          |                                                                                             |                                                                                         |                |
| <b>Disruption to critical hospital utility services and environmental infrastructure</b>                                                                                         | <ul style="list-style-type: none"> <li>Availability and operational status of electricity, water supply, WWTP, TPS LB3, emergency generators, and other critical utilities</li> <li>Number and duration of utility interruptions</li> <li>Response time for restoring interrupted services</li> <li>Number of utility-related incidents or complaints</li> </ul> | Hospital utility facilities, WWTP, TPS LB3, utility corridors, and construction work areas adjacent to existing utilities                                         | <ul style="list-style-type: none"> <li>Site inspections,</li> <li>utility operation logs,</li> <li>maintenance records,</li> <li>incident reports, and</li> <li>GRM records</li> </ul>                                                                                                   | Daily during utility-related construction activities, with monthly summary reporting        | Contractor, RSMM, Supervising Consultant                                                | IDR 30,000,000 |
| <b>Risk of Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA), Sexual Harassment (SH), and inappropriate interaction involving vulnerable psychiatric patients</b> | <ul style="list-style-type: none"> <li>Implementation of the GBV/SEA/SH Prevention and Response Plan;</li> <li>percentage of workers completing mandatory GBV/SEA/SH training;</li> <li>percentage of workers signing the Worker Code of Conduct;</li> <li>functionality of access control,</li> </ul>                                                           | Workers' basecamp and laydown area, construction site, hospital operational interface, psychiatric inpatient wards (external interface only), RSMM Project Office | <ul style="list-style-type: none"> <li>Document review;</li> <li>training records;</li> <li>grievance records;</li> <li>site inspections;</li> <li>compliance audits;</li> <li>joint inspections with hospital security;</li> <li>stakeholder consultations where applicable.</li> </ul> | Quarterly throughout the construction phase and following any reported GBV/SEA/SH incident. | Contractor; Construction Supervision Consultant (CSC); RSMM PIU; Hospital Security Unit | IDR 50,000,000 |

| Key Risks & Impacts                                                                        | Monitoring Parameters                                                                                                                                                                                                                                                                                                                                                                                                                                          | Locations                                                                                                               | Measurements                                                                                                                                                                                                                                   | Frequency                                                                                                                            | Responsibilities                                          | Cost Estimate* |
|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|----------------|
|                                                                                            | fencing, lighting and CCTV;<br>• number and status of GBV/SEA/SH grievances received and resolved;<br>• compliance with restricted access requirements;                                                                                                                                                                                                                                                                                                        |                                                                                                                         |                                                                                                                                                                                                                                                |                                                                                                                                      |                                                           |                |
| <b>Temporary economic displacement and disruption of livelihoods of commercial tenants</b> | • Implementation of the Commercial Tenant Relocation and Livelihood Restoration Plan;<br>• number of affected tenants consulted;<br>• completion of baseline business verification;<br>• timely provision of relocation assistance;<br>• continuity of business operations;<br>• number and status of grievances received and resolved;<br>• restoration of business operations following relocation;<br>• post-relocation business recovery (including income | Existing commercial support facilities, temporary relocation sites, new commercial facilities, and RSMM Project Office. | • Review of consultation records;<br>• verification of relocation documentation;<br>• business surveys; field inspections;<br>• grievance records;<br>• interviews with affected tenants;<br>• review of business recovery monitoring reports. | Quarterly during relocation and construction, and once within six months after tenants resume operation in the permanent facilities. | RSMM PIU; Contractor; Construction Supervision Consultant | IDR 50.000.000 |

| Key Risks & Impacts | Monitoring Parameters                                                                                                                                                                                                                                                                                                                                                                                                                | Locations | Measurements | Frequency | Responsibilities | Cost Estimate* |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------|-----------|------------------|----------------|
|                     | <p>trends where feasible).</p> <ul style="list-style-type: none"> <li>• completion of tenant-specific contractual and livelihood verification;</li> <li>• status of eligible relocation, transitional, or financial assistance provided to affected tenants;</li> <li>• compliance with agreed relocation arrangements and timing;</li> <li>• post-relocation business recovery and restoration of livelihood conditions.</li> </ul> |           |              |           |                  |                |

\* Cost estimates are preliminary and indicative only. Actual monitoring costs may vary depending on construction methods, monitoring requirements, implementation arrangements, contractor pricing, and site conditions, and may be refined during project implementation.

### **10.2.3 Operational Stage Monitoring Program**

During the operation stage, monitoring activities will focus on ensuring that hospital services and supporting facilities operate in accordance with environmental and social commitments established during the ESIA process. Key monitoring aspects include healthcare waste management, wastewater treatment performance, community health and safety, stakeholder engagement, traffic conditions, and the ongoing preservation of cultural heritage elements within the hospital complex. Monitoring outcomes will support continuous improvement of environmental and social performance throughout the operational life of the facility.

**Table 10.6. Environmental and Social Monitoring Measures for Operational Stage**

| Key Risks & Impacts                                   | Monitoring Parameters                                                                                                                                                                                     | Locations                                             | Measurements                                                                                                                                                                                                                             | Frequency | Responsibilities | Cost Estimate*  |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------------|-----------------|
| <b>Improved healthcare access and service quality</b> | <ul style="list-style-type: none"> <li>• Patient satisfaction levels;</li> <li>• Service utilization rates;</li> <li>• Staffing adequacy;</li> <li>• Accessibility of healthcare services</li> </ul>      | RSMM healthcare facilities                            | <ul style="list-style-type: none"> <li>• Review of hospital service records;</li> <li>• Patient satisfaction surveys;</li> <li>• Staffing records</li> </ul>                                                                             | Quarterly | RSMM             | IDR 50,000,000  |
| <b>Increased employment opportunities</b>             | <ul style="list-style-type: none"> <li>• Number of employees recruited;</li> <li>• Proportion of local workforce employed;</li> <li>• Training activities conducted</li> </ul>                            | RSMM facilities                                       | Review of employment and training records                                                                                                                                                                                                | Annually  | RSMM             | IDR 25,000,000  |
| <b>Healthcare waste generation</b>                    | <ul style="list-style-type: none"> <li>• Volume of healthcare waste generated;</li> <li>• Waste segregation compliance;</li> <li>• Waste storage conditions;</li> <li>• Waste disposal records</li> </ul> | Waste storage facilities and healthcare service areas | <ul style="list-style-type: none"> <li>• Site inspections;</li> <li>• Waste manifests;</li> <li>• Contractor records; audit reports</li> </ul>                                                                                           | Monthly   | RSMM             | IDR 100,000,000 |
| <b>Radiation exposure</b>                             | <ul style="list-style-type: none"> <li>• Radiation exposure dose</li> <li>• Use of PPE</li> </ul>                                                                                                         | Radiology Room                                        | <ul style="list-style-type: none"> <li>• Checking of PPE compliance against regulation (type of material, technical specification)</li> <li>• Implementation of SOP for radiation dose monitoring for workers by using Thermo</li> </ul> | Quarterly | RSMM             | IDR 50,000,000  |

| Key Risks & Impacts                                                                                             | Monitoring Parameters                                                                                                                                                                                 | Locations                                              | Measurements                                                                                                                          | Frequency | Responsibilities | Cost Estimate* |
|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-----------|------------------|----------------|
|                                                                                                                 |                                                                                                                                                                                                       |                                                        | Luminescence Dosemeter (TLD)                                                                                                          |           |                  |                |
| <b>Wastewater generation</b>                                                                                    | <ul style="list-style-type: none"> <li>Effluent quality parameters in accordance with applicable regulations;</li> <li>WWTP operational performance</li> </ul>                                        | Wastewater treatment plant (WWTP) and discharge points | <ul style="list-style-type: none"> <li>Laboratory analysis;</li> <li>Operational inspections;</li> <li>Monitoring records</li> </ul>  | Quarterly | RSMM             | IDR 75,000,000 |
| <b>Increased traffic volume</b>                                                                                 | <ul style="list-style-type: none"> <li>Traffic flow conditions; parking occupancy;</li> <li>Traffic complaints and incidents</li> </ul>                                                               | Hospital access roads and parking areas                | <ul style="list-style-type: none"> <li>Traffic observations;</li> <li>Complaint records;</li> <li>Incident reports</li> </ul>         | Quarterly | RSMM             | IDR 50,000,000 |
| <b>Occupational health and safety risks</b>                                                                     | <ul style="list-style-type: none"> <li>Number of incidents and near misses;</li> <li>PPE compliance;</li> <li>OHS training conducted;</li> <li>Occupational health monitoring results</li> </ul>      | Hospital facilities                                    | <ul style="list-style-type: none"> <li>Review of OHS records;</li> <li>Workplace inspections;</li> <li>Incident reports</li> </ul>    | Monthly   | RSMM             | IDR 75,000,000 |
| <b>Community health and safety risks</b>                                                                        | <ul style="list-style-type: none"> <li>Community complaints;</li> <li>Emergency response incidents;</li> <li>Security incidents;</li> <li>Healthcare waste transport incidents</li> </ul>             | Hospital premises and surrounding communities          | <ul style="list-style-type: none"> <li>Review of GRM records;</li> <li>Incident reports; security logs</li> </ul>                     | Quarterly | RSMM             | IDR 50,000,000 |
| <b>Risk of exclusion or unequal access for vulnerable patients, including patients with mental disabilities</b> | <ul style="list-style-type: none"> <li>Implementation of disability-inclusive hospital SOPs</li> <li>Percentage of staff completing disability inclusion and patient safeguarding training</li> </ul> | Hospital-wide                                          | <ul style="list-style-type: none"> <li>SOP implementation status</li> <li>% of staff trained</li> <li>Number of complaints</li> </ul> | Quarterly | RSMM             | IDR 75,000,000 |

| Key Risks & Impacts                                           | Monitoring Parameters                                                                                                                                                                                                                                                                                                                                                                             | Locations                                   | Measurements                                                                                                                                                                           | Frequency     | Responsibilities | Cost Estimate* |
|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|------------------|----------------|
|                                                               | <ul style="list-style-type: none"> <li>Number of complaints related to discrimination, exclusion, or unequal access</li> <li>Percentage of complaints resolved within established timeframe</li> <li>Availability of reasonable accommodation measures for vulnerable patients</li> <li>Patient satisfaction among vulnerable groups (including mental health patients and caregivers)</li> </ul> |                                             | <ul style="list-style-type: none"> <li>received and resolved</li> <li>% Complaints resolved</li> <li>Site inspection and service audit</li> <li>Patient satisfaction survey</li> </ul> |               |                  |                |
| <b>Increased consumption of water and energy resources</b>    | <ul style="list-style-type: none"> <li>Water consumption;</li> <li>Electricity consumption;</li> <li>Implementation of conservation measures</li> </ul>                                                                                                                                                                                                                                           | Hospital facilities                         | <ul style="list-style-type: none"> <li>Utility meter readings;</li> <li>Utility consumption records;</li> <li>Facility inspections</li> </ul>                                          | Monthly       | RSMM             | IDR 50,000,000 |
| <b>Preservation and promotion of cultural heritage values</b> | <ul style="list-style-type: none"> <li>Physical condition of ODCB building;</li> <li>Operation of heritage exhibition facilities;</li> <li>Availability of interpretation materials;</li> <li>Visitor engagement records</li> </ul>                                                                                                                                                               | ODCB building and associated heritage areas | <ul style="list-style-type: none"> <li>Visual inspections;</li> <li>Maintenance records;</li> <li>Visitor records; documentation review</li> </ul>                                     | Semi-annually | RSMM             | IDR 50,000,000 |

\* Cost estimates are preliminary and indicative only. Actual monitoring costs may vary depending on operational requirements, monitoring methodologies, regulatory requirements, and future budget allocations, and may be refined during project implementation.

### 10.3 Stakeholder Roles and Responsibilities for ESMP Implementation

Effective implementation of the Environmental and Social Management Plan (ESMP) requires clear allocation of responsibilities among the Project Owner, contractors, supervising consultants, government agencies, and other relevant stakeholders. This section outlines the institutional arrangements and responsibilities for implementing, monitoring, and reporting environmental and social management measures throughout the Project lifecycle.

The objective of this arrangement is to ensure that environmental and social commitments identified in the ESIA are effectively integrated into project planning, construction, operation, and post-operation activities.

#### Institutional Arrangement for ESMP Implementation

The implementation of the ESMP will involve several parties, each with specific roles and responsibilities. RSMM, as the Project Proponent, will retain overall responsibility for environmental and social performance and compliance with applicable national regulations and AIIB Environmental and Social Standards.

Contractors engaged during the construction phase will be responsible for implementing day-to-day environmental, social, health, and safety (ESHS) measures in accordance with contractual requirements and the ESMP. Where required, specialist consultants may be engaged to support implementation and monitoring of specific issues, including Cultural Heritage management.

Relevant government agencies will continue to perform their regulatory and oversight functions in accordance with their respective mandates.

**Table 10.7. Roles and Responsibilities for ESMP Implementation**

| Stakeholder                           | Roles and Responsibilities                                                                                                                                                                                              |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RSMM (Project Proponent)              | Overall responsibility for ESMP implementation; ensuring compliance with applicable regulations and AIIB requirements; allocation of resources; stakeholder engagement; grievance management; monitoring and reporting. |
| Project Management Unit (PMU)         | Coordinate implementation of ESMP; supervise contractors; maintain monitoring records; prepare environmental and social performance reports; coordinate corrective actions where necessary.                             |
| Construction Contractor               | Implement environmental, social, health and safety (ESHS) measures; conduct routine inspections; maintain compliance records; manage workforce and subcontractors; report incidents and grievances.                     |
| Supervising Consultant (if appointed) | Monitor contractor performance; verify implementation of ESMP requirements; provide recommendations for corrective actions; support compliance monitoring.                                                              |
| Environmental and Social Specialists  | Provide technical advice on environmental and social management; support monitoring activities; assist with reporting and capacity building.                                                                            |

| Stakeholder                                       | Roles and Responsibilities                                                                                                                                                               |
|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cultural Heritage Specialist / TACB (as required) | Provide advice regarding management of ODCB and Cultural Heritage resources; review proposed interventions affecting heritage elements; support monitoring and documentation activities. |
| Local Government Agencies                         | Regulatory oversight; coordination and support related to environmental management, public services, cultural heritage, and community affairs.                                           |
| Community Representatives                         | Participate in stakeholder engagement activities; provide feedback and input regarding project implementation; utilize project grievance mechanism where necessary.                      |
| AIIB / Financing Institutions                     | Review environmental and social performance reports; monitor compliance with financing requirements and applicable environmental and social standards.                                   |

### Reporting and Communication

Environmental and social performance information will be documented and reported throughout the Project lifecycle. Contractors will submit regular reports to the Project Management Unit, which will consolidate environmental and social monitoring results, stakeholder engagement outcomes, grievance records, incident reports, and implementation status of mitigation measures.

The reporting process will support adaptive management and facilitate communication between RSMM, contractors, government agencies, affected communities, and financing institutions.

### 10.4 Training and Capacity Development

Effective implementation of the Environmental and Social Management Plan (ESMP) requires adequate institutional capacity, technical competency, and awareness among personnel involved in the Project. Training and capacity development activities will therefore be undertaken to ensure that environmental, social, health, and safety (ESHS) requirements are properly understood and implemented throughout the Project lifecycle.

The objectives of the training and capacity development program are to:

- Enhance awareness of environmental and social risks and impacts associated with the Project;
- Strengthen the capacity of RSMM personnel, contractors, and subcontractors to implement ESMP requirements;
- Promote compliance with applicable Indonesian regulations and AIIB Environmental and Social Standards;
- Improve stakeholder engagement and grievance management practices;
- Ensure protection of community health and safety, worker health and safety, and Cultural Heritage resources.

**Training and Capacity Development Requirements**

Training requirements may vary depending on project phase and personnel responsibilities. General awareness training shall be provided to all workers, while specialized training shall be delivered to personnel responsible for environmental, social, health and safety management.

Particular attention shall be given to personnel responsible for implementing mitigation measures related to community relations, Cultural Heritage management, emergency preparedness, and occupational health and safety.

**Table 10.8. Training and Capacity Development Program**

| Training Topic                           | Objective                                                           | Target Participants                           | Timing / Frequency                           | Responsibility                      |
|------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------|----------------------------------------------|-------------------------------------|
| ESMP Awareness Training                  | Introduce ESMP commitments and requirements                         | RSMM PMU, Contractors, Supervisors            | Prior to construction and refresher annually | RSMM                                |
| Occupational Health and Safety (OHS)     | Promote safe work practices and incident prevention                 | Contractors, Workers, Supervisors             | Induction and quarterly refresher            | Contractor                          |
| Community Health and Safety              | Prevent risks to nearby communities during project activities       | Contractors, PMU, Supervisors                 | Prior to construction and annually           | RSMM / Contractor                   |
| Stakeholder Engagement and Communication | Strengthen communication with affected communities and stakeholders | PMU, Community Liaison Personnel              | Annually                                     | RSMM                                |
| Grievance Redress Mechanism (GRM)        | Ensure effective grievance handling and documentation               | PMU, Contractors, Community Liaison Personnel | Annually                                     | RSMM                                |
| Environmental Management                 | Strengthen implementation of environmental mitigation measures      | PMU, Environmental Officers, Contractors      | Annually                                     | RSMM                                |
| Waste Management                         | Improve segregation, handling, storage, and disposal practices      | Contractors, Operational Staff                | Annually                                     | RSMM                                |
| Emergency Preparedness and Response      | Improve readiness for accidents and emergency situations            | PMU, Contractors, Hospital Personnel          | Annual drills and refresher training         | RSMM                                |
| Cultural Heritage Awareness              | Increase awareness regarding ODCB and heritage-sensitive            | PMU, Contractors, Supervisors                 | Prior to construction and as required        | RSMM / Cultural Heritage Specialist |

| Training Topic                                    | Objective                                                        | Target Participants                           | Timing / Frequency | Responsibility |
|---------------------------------------------------|------------------------------------------------------------------|-----------------------------------------------|--------------------|----------------|
|                                                   | areas within the Project site                                    |                                               |                    |                |
| Gender, Inclusion and Vulnerable Groups Awareness | Promote inclusive engagement and protection of vulnerable groups | PMU, Contractors, Community Liaison Personnel | Annually           | RSMM           |

### **Evaluation of Training Effectiveness**

The effectiveness of training and capacity development activities will be periodically evaluated through attendance records, competency assessments, site inspections, incident trends, and feedback from participants. Where gaps in knowledge or implementation performance are identified, additional refresher training or targeted capacity-building activities will be undertaken.

Training records shall be maintained by RSMM and relevant contractors as part of the Project's environmental and social management documentation.

## 11 STAKEHOLDER CONSULTATION AND INFORMATION DISCLOSURE

### 11.1 Objectives of Stakeholder Consultation and Information Disclosure

Stakeholder consultation and information disclosure are essential components of the Environmental and Social Impact Assessment (ESIA) process for the redevelopment project of Rumah Sakit Jiwa Dr. H. Marzoeqi Mahdi (RSMM) Bogor. The consultation process aims to ensure meaningful engagement with stakeholders who may be affected by or have an interest in the Project throughout the ESIA preparation process.

The objectives of stakeholder consultation and information disclosure are to:

- Provide stakeholders with timely, relevant, understandable, and accessible information regarding the proposed Project;
- Identify and understand stakeholder concerns, expectations, and perceptions related to the Project;
- Facilitate transparent and inclusive communication between the Project and affected stakeholders;
- Incorporate stakeholder feedback into the ESIA process and Project planning where relevant and feasible;
- Ensure participation of vulnerable and potentially affected groups, including patients, elderly persons, women, persons with disabilities, and surrounding communities;
- Support environmental and social risk management through participatory approaches;
- Fulfil the requirements of the Asian Infrastructure Investment Bank (AIIB) Environmental and Social Framework (ESF) and applicable Indonesian regulations.

Stakeholder consultation activities were conducted through various methods, including formal meetings, focused discussions, key informant interviews, field observations, and public consultations. Information disclosure was undertaken using communication methods appropriate to the local context and stakeholder characteristics.

The draft ESIA and associated ESMP will be publicly disclosed through the official RSMM website. The website link to the disclosed documents will be inserted in the final ESIA following completion of the public disclosure process. In accordance with the AIIB Environmental and Social Framework (ESF), the ESIA may also be disclosed through the AIIB project webpage after submission by the Borrower and completion of AIIB's disclosure procedures, where applicable.

## 11.2 Stakeholders Consulted During ESIA Preparation

Stakeholder consultation activities conducted during the ESIA preparation process involved various parties that may be affected by, have an interest in, or influence the redevelopment project of Rumah Sakit dr. H. Marzoeqi Mahdi (RSMM) Bogor.

The identification of stakeholders consulted during the ESIA process was undertaken to ensure that relevant perspectives, concerns, expectations, and recommendations were considered in the environmental and social assessment process.

Stakeholders consulted during the ESIA preparation generally included the following groups:

### Government Institutions and Regulatory Agencies

Consultation and coordination activities were conducted with relevant government institutions and regulatory agencies related to environmental management, healthcare services, labor, transportation, and cultural heritage protection. These stakeholders included:

- Ministry of Health;
- Environmental Agency (DLH);
- Health Agency (Dinas Kesehatan);
- Manpower Agency (Disnaker);
- Transportation Agency;
- Local Government representatives;
- Kecamatan and Kelurahan authorities;
- Relevant cultural heritage institutions and authorities.

### Hospital Internal Stakeholders

Internal consultations were conducted with hospital representatives to obtain information regarding existing operations, service continuity requirements, operational challenges, and environmental and social management practices. Stakeholders consulted included:

- Hospital Management;
- Medical personnel;
- Administrative staff;
- Operational and maintenance personnel;
- Security personnel;
- Existing service providers and vendors.

### Communities and External Stakeholders

Consultation activities were also conducted with surrounding communities and external stakeholders who may potentially experience direct or indirect impacts from Project activities. These stakeholders included:

- Community leaders;
- Local residents surrounding the hospital area;
- Religious leaders;
- Patients and hospital visitors;
- Local business representatives;
- Vulnerable groups;
- Non-governmental organizations (if applicable).

### **Project Workforce Representatives**

Where relevant, consultations were conducted with contractor representatives, workers, and technical personnel regarding occupational health and safety, construction management, and labor-related matters associated with Project implementation.

The consultation process sought to ensure inclusive participation and meaningful engagement, particularly for vulnerable groups and individuals who may face barriers to accessing information or participating in consultation activities.

The stakeholders identified and consulted during the ESIA preparation process provided important input regarding:

- Environmental and social concerns;
- Community expectations;
- Potential Project impacts;
- Cultural heritage considerations;
- Hospital operational continuity;
- Occupational and community safety;
- Recommendations for mitigation and stakeholder communication.

The outcomes of these consultations have been incorporated into the ESIA analysis and the development of environmental and social management measures, including the Stakeholder Engagement Plan (SEP) and Grievance Redress Mechanism (GRM).

### **11.3 Consultation Methods Applied During ESIA Preparation**

Stakeholder consultation activities during the ESIA preparation stage were designed to ensure inclusive participation and effective communication with relevant stakeholders throughout the assessment process.

Consultation methods were selected based on stakeholder characteristics, consultation objectives, accessibility considerations, and the nature of issues discussed. The consultation process included both formal and informal engagement approaches.

**Table 11.1. Consultation Methods During ESIA Preparation**

| Consultation Method                      | Target Stakeholders                                          | Purpose                                                               |
|------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------------------------|
| <b>Public Consultation Meetings</b>      | Communities, government agencies, NGOs                       | Presentation of Project information and collection of public feedback |
| <b>Key Informant Interviews (KII)</b>    | Government officials, hospital management, community leaders | Collection of strategic and technical information                     |
| <b>Focus Group Discussions (FGD)</b>     | Community groups, vulnerable groups, workers                 | Discussion of specific concerns and impacts                           |
| <b>Field Observation</b>                 | Communities, surrounding environment                         | Verification of site conditions and stakeholder context               |
| <b>Informal Meetings</b>                 | Local residents, hospital users                              | Identification of local concerns and expectations                     |
| <b>Disclosure of Project Information</b> | All stakeholders                                             | Provision of Project-related information and ESIA updates             |

Consultation activities focused on issues including:

- Construction impacts (dust, noise, vibration, traffic);
- Occupational and community health and safety;
- Access to hospital services during redevelopment;
- Waste management;
- Cultural heritage protection;
- Employment opportunities;
- Environmental management measures;
- Continuity of hospital operations;
- Community concerns and expectations.

Information disclosure was conducted in Bahasa Indonesia using accessible communication methods to ensure stakeholder understanding.

#### **11.4 Summary of Stakeholder Engagement Activities Conducted During ESIA Preparation**

Stakeholder engagement activities were undertaken throughout the ESIA preparation process to obtain information, understand stakeholder concerns and expectations, and support the identification and assessment of environmental and social impacts associated with the Project.

Consultation activities involved government institutions, hospital management, community representatives, local residents, and other relevant stakeholders. The consultations provided

valuable information regarding existing environmental and social conditions, cultural heritage considerations, community expectations, hospital operational requirements, and potential Project-related impacts.

A summary of stakeholder consultation activities conducted during the ESIA process is presented in Table 11.2.

**Table 11.2. Summary of Consultation Activities**

| <b>Date</b>       | <b>Stakeholder Group</b>                                      | <b>Consultation Method</b>               | <b>Key Issues Raised</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Project Response</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------|---------------------------------------------------------------|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 22 September 2025 | Government Agency                                             | Coordination meetings and reporting      | Support for the development of the Genebank and RSPPU facilities as part of strengthening regional healthcare services. The mayor emphasized the need to comply with applicable regulations, safety standards, and sustainable operational practices. Recommendations were also provided regarding preparation of detailed technical planning, budget requirements, implementation stages, and coordination with relevant government agencies.                                                                                                                                                                                                                                  | RSMM presented the proposed development of the Genebank and RSPPU facilities, including their objectives, planned functions, and infrastructure requirements. RSMM committed to preparing detailed technical plans, coordinating with relevant authorities, and ensuring that project development complies with applicable regulatory and environmental and social requirements.                                                                                                                                                                                                                                                                                                                          |
| 30 December 2025  | Local Residents (Lurah, RW, RT) and Community Representatives | Public socialization and open discussion | Public representatives expressed general support for the national strategic project but emphasized the critical need for meticulous technical planning to prevent future community grievances. Key concerns included requests for detailed clarification regarding the exact boundaries and timeline of the 15-meter road widening that affects local housing and state assets (BMN). Residents also requested that public facilities, pedestrian pathways, and bicycle lanes remain functional and safe during heavy machinery mobilization, alongside a specific proposal to complete the construction of the replacement mosque prior to the demolition of the existing one. | The project team confirmed that the Genebank and RSPPU expansions are part of an integrated national health strategy acknowledged by the Mayor, with the exact implementation timeline currently awaiting final central government directives. Socialization and relocation processes for active employees occupying the affected state housing (BMN) have been successfully conducted. The project management committed to rebuilding the mosque at the same location with a larger capacity. Preliminary engineering surveys (such as site reconnaissance, topographic measurements, and utility identification) have been undertaken to support the detailed engineering design. These activities were |

| Date          | Stakeholder Group                                             | Consultation Method                      | Key Issues Raised                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Project Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------|---------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               |                                                               |                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | limited to non-intrusive surveys and did not involve land clearing, excavation, or other ground-disturbing construction works. All future construction activities will be carried out only after the completion of the ESIA process and in accordance with the applicable Environmental and Social Management requirements.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 13 March 2026 | Local Residents (Lurah, RW, RT) and Community Representatives | Public socialization and open discussion | Community members raised inquiries regarding local human resources recruitment, requesting that the contractor prioritize and collaborate with the local youth group (Karang Taruna) and LPM during both construction and operational phases. Significant environmental and health concerns were expressed regarding drainage management, wastewater handling, potential dust or ISPA risks, and a reported disruption to the Cikembang water spring which local residents still rely on. Additionally, logistics and infrastructure issues were brought forward, including a proposal for a direct project access route to bypass residential zones and complaints concerning stormwater run-off flooding nearby houses due to recent concrete road elevation works. | The contractor stated full openness to maximizing the recruitment of local labor, particularly as workforce requirements increase during peak construction phases. The AMDAL and environmental evaluation documents (DELH) formally incorporate comprehensive risk mitigations, wastewater management systems, and safety assurances regarding the non-hazardous nature of the stored biological specimens. The consultant team committed to conducting detailed field investigations regarding the reported disruption of the Cikembang spring and the localized drainage issues causing residential flooding. The investigation findings will be documented prior to the commencement of construction, and where necessary, appropriate mitigation measures will be incorporated into the detailed engineering |

| Date         | Stakeholder Group                                                                                                                                               | Consultation Method                        | Key Issues Raised                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Project Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              |                                                                                                                                                                 |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | design and the Environmental and Social Management Plan (ESMP) to ensure that project activities do not adversely affect community water resources, drainage systems, or nearby residential areas. Furthermore, any public health or community safety concerns identified during the investigation or subsequent project implementation will be managed through coordination with the relevant technical agencies and the local Public Health Centre (Puskesmas), as appropriate.                                                                                                                                                   |
| 11 June 2026 | Local community representatives (RW/RT), affected residents, Karang Taruna, Bogor City Environmental Agency, Babinsa, Bhabinkamtibmas, and RSMM representatives | Public consultation and disclosure meeting | Participants generally supported the Project while requesting effective management of construction-related impacts, particularly drainage and flooding, dust, noise, traffic management, local employment opportunities, protection of public utilities (including PDAM pipelines), grievance mechanisms, and continued communication with affected communities. Participants also requested that construction activities should not commence before the AMDAL approval process is completed. | RSMM and the ESIA Consultant explained the Project scope, potential environmental and social impacts, and proposed mitigation measures. Commitments were made to incorporate stakeholder feedback into the ESIA and ESMP, including preparation of a Traffic Management Plan (ANDALALIN), strengthening drainage and stormwater management, implementing dust and noise control measures, prioritizing local workforce recruitment where qualifications are met, establishing a Project-level GRM, protecting existing public infrastructure, and maintaining regular communication with surrounding communities throughout project |

| Date | Stakeholder Group | Consultation Method | Key Issues Raised | Project Response                                                                                                    |
|------|-------------------|---------------------|-------------------|---------------------------------------------------------------------------------------------------------------------|
|      |                   |                     |                   | implementation. The consultation findings have been incorporated into the ESIA, ESMP, and related management plans. |

An additional public consultation meeting was conducted on **11 June 2026** following completion of the draft ESIA to disclose the Project information, present the preliminary environmental and social assessment findings, and obtain stakeholder feedback prior to finalization of the ESIA. The consultation involved representatives of affected communities, local government agencies, community organizations, and other stakeholders. Key issues raised during the consultation have been incorporated into the ESIA, Environmental and Social Management Plan (ESMP), Stakeholder Engagement Plan (SEP), and Project-level Grievance Redress Mechanism (GRM), as appropriate. Detailed records of the consultation, including participant lists, presentation materials, minutes of meeting, photographs, and comments received, are provided in **Annex E**.

### **11.5 Assessment of Stakeholder Engagement Outcomes**

Stakeholder engagement activities undertaken during the ESIA preparation process indicate a generally positive perception of the Project among government institutions, community representatives, and local residents. Stakeholders broadly recognize the potential benefits of the Project in improving healthcare services, expanding medical research capacity, and supporting regional and national healthcare development objectives.

Consultations with government representatives demonstrated strong institutional support for the development of the Genebank and RSPPU facilities. Key recommendations focused on ensuring compliance with applicable regulations, safety standards, sustainable operational practices, and effective coordination with relevant government agencies throughout project implementation.

Consultations with local communities and community leaders highlighted the importance of maintaining transparent communication regarding project schedules, construction activities, and potential impacts on surrounding neighborhoods. Stakeholders emphasized the need for careful management of road widening activities, protection of public facilities and community access, continuity of religious facilities, and implementation of measures to minimize disruption during construction.

Community consultations also identified several environmental and social concerns requiring further consideration within the ESIA process. These included drainage management, wastewater handling, dust generation, potential public health risks, impacts on local water resources, traffic and logistics management, and localized flooding issues. Stakeholders further expressed expectations regarding local employment opportunities and encouraged the Project to prioritize recruitment of qualified local workers where feasible.

The consultation process also provided valuable input regarding stakeholder expectations for community safety, accessibility, environmental management, and ongoing information disclosure throughout Project implementation. These concerns and recommendations have been considered in the ESIA impact assessment and have informed the development of mitigation measures, environmental and social management plans, stakeholder engagement activities, and grievance management procedures.

Overall, stakeholder feedback obtained during the ESIA preparation process did not identify any fundamental opposition to the Project. Instead, stakeholders generally expressed support for the proposed development, subject to the effective implementation of environmental and social management measures, continued stakeholder engagement, and transparent communication throughout the Project lifecycle.

## 12 STAKEHOLDER ENGAGEMENT PLAN

### 12.1 Stakeholder Identification

Stakeholder identification was conducted to determine parties that may influence, be affected by, or have an interest in the redevelopment project of Rumah Sakit dr. H. Marzoeki Mahdi (RSMM) Bogor. Stakeholders were identified based on their relationship to the Project, potential exposure to environmental and social impacts, institutional authority, and level of influence on Project implementation.

The Project stakeholders are broadly categorized as follows:

#### Government and Regulatory Institutions

- Ministry of Health;
- Environmental Agency (DLH);
- Health Agency (Dinas Kesehatan);
- Manpower Agency (Disnaker);
- Transportation Agency;
- Cultural Heritage Authority;
- Local Government of Bogor City;
- Kecamatan and Kelurahan authorities.

#### Internal Hospital Stakeholders

- Hospital Management;
- Medical personnel;
- Hospital employees;
- Security and maintenance personnel;
- Existing tenants and service providers.
- Project Workforce
- Contractors and subcontractors;
- Construction workers;
- Supervising consultants;
- Suppliers and vendors, including licensed third-party service providers such as PT Prasadha Pamunah Limbah Industri, which is responsible for the collection, transportation, and treatment/disposal of hazardous healthcare waste generated by the hospital.

#### Communities and External Stakeholders

- Communities surrounding the hospital area;
- Patients and visitors;
- Community leaders;
- Religious leaders;
- Local businesses;
- Media representatives;
- Non-governmental organizations (NGOs);

### **Vulnerable groups.**

Particular attention will be given to vulnerable groups that may experience barriers to participation, including elderly persons, persons with disabilities, women, economically disadvantaged households, patients with special healthcare needs and caregivers of mental health patients.

## **12.2 Stakeholder Mapping and Analysis**

Stakeholder mapping and analysis were conducted to understand stakeholder interests, influence, concerns, and preferred engagement approaches. This assessment supports the development of appropriate engagement strategies throughout Project implementation.

**Table 12.1. Stakeholder Mapping and Analysis**

| <b>Stakeholder</b>                  | <b>Level of Interest</b> | <b>Level of Influence</b> | <b>Potential Concerns</b>                                                        | <b>Engagement Method</b>                                                  |
|-------------------------------------|--------------------------|---------------------------|----------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| <b>Ministry of Health</b>           | High                     | High                      | Project compliance and service continuity                                        | Coordination meetings and reporting                                       |
| <b>Hospital Management</b>          | High                     | High                      | Operational disruption and patient safety                                        | Regular coordination meetings                                             |
| <b>DLH and Government Agencies</b>  | High                     | High                      | Environmental compliance                                                         | Formal consultation and reporting                                         |
| <b>Communities Surrounding RSMM</b> | High                     | Medium                    | Noise, dust, traffic, safety                                                     | Public consultation and community meetings                                |
| <b>Patients and Visitors</b>        | High                     | Low                       | Access, comfort, and safety                                                      | Information disclosure and complaint mechanism                            |
| <b>Construction contractor(s)</b>   | High                     | Medium                    | Contract implementation, OHS, environmental compliance, and workforce management | Coordination meetings, toolbox meetings, and ESMP implementation meetings |

| Stakeholder                                                                                        | Level of Interest | Level of Influence | Potential Concerns                                                                          | Engagement Method                                                        |
|----------------------------------------------------------------------------------------------------|-------------------|--------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| <b>Construction Management Consultant / Supervising Consultant</b>                                 | High              | Medium             | Construction supervision, ESMP compliance, quality assurance, and contractor performance    | Regular coordination meetings, site inspections, and monitoring meetings |
| <b>Suppliers and Vendors</b>                                                                       | Medium            | Medium             | Timely delivery of goods and compliance with environmental, health, and safety requirements | Coordination meetings and contractual communication                      |
| <b>Licensed Hazardous Waste Management Contractor (PT Prasadha Pamunah Limbah Industri – PPLI)</b> | High              | Medium             | Safe collection, transportation, treatment, and disposal of hazardous healthcare waste      | Contract management meetings and compliance monitoring                   |
| <b>Workers</b>                                                                                     | High              | Medium             | Occupational health and safety, labor conditions, welfare, and grievance handling           | Toolbox meetings, worker consultations, and worker GRM                   |
| <b>Cultural Heritage Authorities</b>                                                               | High              | Medium             | Protection of heritage buildings                                                            | Technical coordination meetings                                          |
| <b>Vulnerable Groups</b>                                                                           | Medium            | Low                | Access to information and safety                                                            | Targeted engagement and inclusive consultation                           |
| <b>NGOs and Media</b>                                                                              | Medium            | Medium             | Transparency and social impacts                                                             | Information disclosure and consultation                                  |

Stakeholder mapping will be periodically reviewed and updated throughout Project implementation.

### 12.3 Stakeholder Engagement Program

The Stakeholder Engagement Program has been developed to ensure ongoing communication, consultation, and information disclosure throughout the Project lifecycle, including pre-construction, construction, and operational phases.

The program aims to:

- Maintain transparent communication with stakeholders;
- Ensure stakeholder concerns are identified and addressed promptly;
- Facilitate inclusive participation in Project-related decision-making;
- Support implementation of environmental and social management measures;
- Build trust and maintain positive relationships with stakeholders.

**Table 12.2. Stakeholder Engagement Program**

| Project Phase           | Stakeholder                   | Engagement Method                  | Frequency             | Objective                                         |
|-------------------------|-------------------------------|------------------------------------|-----------------------|---------------------------------------------------|
| <b>Pre-Construction</b> | Government Agencies           | Coordination meetings              | As needed             | Permit coordination and regulatory compliance     |
| <b>Pre-Construction</b> | Communities                   | Public consultation                | Prior construction to | Disclosure of Project information                 |
| <b>Construction</b>     | Communities                   | Community meetings                 | Monthly/as needed     | Address community concerns and impacts            |
| <b>Construction</b>     | Workers                       | Toolbox meetings and OHS briefings | Daily/weekly          | Worker safety and awareness                       |
| <b>Construction</b>     | Hospital Management           | Coordination meetings              | Weekly                | Construction coordination and hospital operations |
| <b>Construction</b>     | Cultural Heritage Authorities | Technical consultation             | As needed             | Heritage protection coordination                  |
| <b>Operation</b>        | Communities and Patients      | Information disclosure and GRM     | Ongoing               | Complaint handling and communication              |
| <b>Operation</b>        | Government Agencies           | Monitoring reports                 | Periodically          | Regulatory reporting and compliance               |

Engagement activities will be adapted based on stakeholder feedback, Project developments, and emerging issues.

## 12.4 Resource and Responsibilities

The implementation of the Stakeholder Engagement Plan (SEP) will involve multiple parties responsible for communication, consultation, documentation, grievance handling, and reporting activities.

The Project Management Unit (PMU) will oversee SEP implementation in coordination with Hospital Management, contractors, supervising consultants, and relevant stakeholders.

**Table 12.3. Roles and Responsibilities for SEP Implementation**

| <b>Party</b>                           | <b>Responsibilities</b>                                        |
|----------------------------------------|----------------------------------------------------------------|
| <b>Project Management Unit (PMU)</b>   | Overall coordination of stakeholder engagement activities      |
| <b>Hospital Management</b>             | Communication with hospital users and internal stakeholders    |
| <b>Contractor</b>                      | Community liaison during construction activities               |
| <b>Supervising Consultant</b>          | Monitoring implementation of stakeholder engagement activities |
| <b>Environmental and Social Team</b>   | Documentation, monitoring, and reporting                       |
| <b>Community Liaison Officer (CLO)</b> | Day-to-day communication with communities                      |
| <b>GRM Focal Point</b>                 | Management of grievances and complaints                        |
| <b>OHS Officer</b>                     | Communication regarding occupational health and safety matters |

Adequate human resources and communication tools will be allocated to support effective stakeholder engagement throughout Project implementation.

## 12.5 Monitoring and Reporting

Stakeholder engagement activities will be monitored regularly to evaluate effectiveness, stakeholder participation, responsiveness, and implementation of follow-up actions.

Monitoring indicators may include:

- Number of consultation activities conducted;
- Number of participants attending consultations;
- Stakeholder groups engaged;
- Number and type of grievances received;
- Resolution status of grievances;
- Response time for grievances;
- Stakeholder feedback and satisfaction.

Monitoring results will be documented and incorporated into periodic environmental and social monitoring reports submitted to relevant authorities and AIIB as required.

Corrective actions and improvements to the SEP may be implemented based on monitoring outcomes and stakeholder feedback.

## 12.6 Grievance Redress Mechanism

### 12.6.1 Existing Complaint Handling System of RSMM

RSMM currently operates an established complaint handling system governed by Standard Operating Procedure (SOP) No. OT.02.02/XXV.2/5107/2022 concerning Complaint Handling for Service Users. The SOP provides a structured mechanism for receiving, recording, investigating, escalating, resolving, and documenting complaints submitted by patients, visitors, service users, and other stakeholders regarding hospital services.

Under the existing system, complaints may be submitted directly to customer service personnel, responsible service units, or hospital management through available communication channels. Complaints are recorded in a complaint register and managed through a tiered process involving responsible units, the Public Relations and Legal Affairs function, hospital management, and, where necessary, external institutions. The procedure includes complaint registration, clarification, mediation, management review, resolution, and formal documentation of outcomes.

The existing complaint handling mechanism has been functioning as the primary platform for addressing concerns related to hospital services and stakeholder interactions. For the RSMM Redevelopment Project, this established mechanism will serve as the foundation for the Project-level Grievance Redress Mechanism (GRM).

To meet the requirements of the AIIB Environmental and Social Framework (ESF), the existing complaint handling system will be expanded to accommodate grievances related to project activities, including environmental impacts, construction-related disturbances, labor and working conditions, occupational health and safety, community health and safety, cultural heritage, and Gender-Based Violence/Sexual Exploitation and Abuse/Sexual Harassment (GBV/SEA/SH) concerns. This approach ensures that stakeholders continue to use familiar and accessible complaint channels while strengthening the system to address project-specific environmental and social risks.

Upon receipt of a grievance, RSMM will conduct an initial screening and classification process to determine whether the complaint relates to routine hospital operations or to activities associated with the AIIB-financed RSMM Redevelopment Project. Complaints concerning hospital services, medical treatment, patient care, or other routine operational matters will continue to be managed under the existing RSMM complaint handling procedure in accordance with SOP No. OT.02.02/XXV.2/5107/2022. Complaints related to Project activities—including environmental impacts, construction disturbances, labour and working conditions, occupational health and safety, community health and safety, commercial tenant relocation, cultural heritage, and GBV/SEA/SH—will be managed through the Project-level

GRM using the procedures described in this ESMP. Where a grievance involves both hospital operational issues and Project-related impacts, the relevant hospital units and the Project Management Unit (PMU) will coordinate to ensure a timely, integrated, and consistent resolution.

Project-related grievances will be recorded in a dedicated Project Grievance Register maintained by the PMU while remaining integrated with the hospital's overall complaint management system. Information on Project-related grievances, including the number and type of grievances received, resolution status, outstanding cases, response time, and corrective actions implemented, will be summarized and included in the Project's regular environmental and social monitoring reports submitted to AIIB. Any serious Project-related grievance or incident requiring lender notification, including significant environmental or social incidents and GBV/SEA/SH allegations, will be reported to AIIB in accordance with the applicable incident notification and reporting requirements under the Financing Agreement and the AIIB Environmental and Social Framework.

#### **12.6.2 Objective of the Project -Level GRM**

The objective of the Grievance Redress Mechanism (GRM) is to provide a transparent, accessible, inclusive and effective mechanisms for receiving, handling and resolving complaints and grievance arising from the redevelopment project of the Rumah Sakit dr. H. Marzoeeki Mahdi (RSMM) Bogor in timely manner.

The Project-level GRM builds upon and integrates with the existing RSMM complaint handling system. Rather than establishing a completely separate mechanism, the Project will utilize and strengthen existing grievance channels and procedures to address project-related environmental and social issues in accordance with the AIIB Environmental and Social Framework (ESF). This integrated approach is intended to provide stakeholders, including patients, workers, visitors, contractors, and surrounding communities, with a familiar and accessible “single-door” grievance mechanism.

The GRM is established to ensure that all project-affected parties, including hospital workers, patient's, contractors, local communities, vulnerable groups, and other stakeholders, are able to raise concerns related to environmental, social, occupational health and safety, labor, community health and safety, cultural heritage, and other project-related matters during the project preparation, construction, and operational phases.

The GRM has been developed in accordance with the Environmental and Social Framework (ESF) of the Asian Infrastructure Investment Bank (AIIB), applicable Indonesian regulations, and international good practices.

### 12.6.3 Principles for Design of Project GRM

The project level GRM is designed based on following principles:

☐ Accessibility

Multiple grievance channels are established to ensure affected persons can conveniently submit complaints and concerns. The GRM is accessible to all stakeholders, including vulnerable groups, persons with disabilities, elderly people, women, patients, and hospital visitors.

☐ Multiple Submission Channels

The Project will utilize RSMM's existing complaint channels as the primary means for receiving project-related grievances. To ensure accessibility for patients, workers, contractors, visitors, commercial tenants, and surrounding communities, grievances may be submitted through the following channels:

- Telephone: 0251-8324024;
- Email: [rsmm.bgr@gmail.com](mailto:rsmm.bgr@gmail.com);
- Website: <https://rsmmbogor.com>;
- Whatsapp number: +62 812-9748-7447;
- Suggestion boxes;
- Written letters;
- In-person reporting;
- Community consultation meetings.

The existing RSMM WhatsApp complaint service will also serve as the primary digital communication channel for Project-related grievances, ensuring that stakeholders can access a familiar and integrated "single-door" grievance mechanism throughout the Project lifecycle.

☐ Flexibility of Submission

Complaints may be submitted verbally, in writing, or through any of the existing RSMM communication channels, including the dedicated WhatsApp complaint service. Complaints may be submitted directly by affected persons or through authorized representatives. Anonymous complaints will also be accepted and treated confidentially.

☐ Representation

Complainants may appoint family members, community leaders, legal representatives, or trusted persons to act on their behalf.

☐ Transparency

The GRM procedures, responsible parties, resolution timelines, escalation pathways, and monitoring mechanisms will be publicly disclosed through consultation meetings, notice boards, hospital communication media, and project information materials.

☐ Documentation

All complaints and grievance resolutions will be documented in a Grievance Register maintained by the Project Management Unit (PMU) and/or Hospital Management

☐ Timely Resolution

Complaint receipt will be acknowledged within five (5) working days from submission. Resolution efforts will be initiated immediately after acknowledgment and targeted to be resolved within fifteen (15) working days depending on the complexity of the case.

☐ Confidentiality and Non-Retaliation

All grievances will be handled confidentially. The project will ensure that complainants are protected from retaliation, discrimination, intimidation, or any adverse consequences resulting from grievance submission.

☐ Fairness and Inclusiveness

The grievance process will ensure fair treatment for all complainants without discrimination based on gender, ethnicity, religion, disability, social status, or other conditions.

☐ Appeal Mechanism

If a complainant is not satisfied with the proposed resolution, the grievance may be escalated to higher management levels or relevant government institutions. A multi-stakeholder committee may be formed on an ad-hoc basis for unresolved cases.

☐ Monitoring and Continuous Improvement

All grievances received, resolved, and pending will be monitored regularly to identify trends, recurring issues, and opportunities for improvement of project implementation.

☐ No Cost to Complainants

Complainants will not bear any administrative costs related to grievance submission and resolution at the project level. However, if complainants pursue legal action through court proceedings, associated legal costs will be borne by the complainants.

#### 12.6.4 Grievance Redress Mechanism Process and Procedures

To ensure accountability, transparency, and effective communication with stakeholders, the project establishes a structured grievance handling mechanism applicable to:

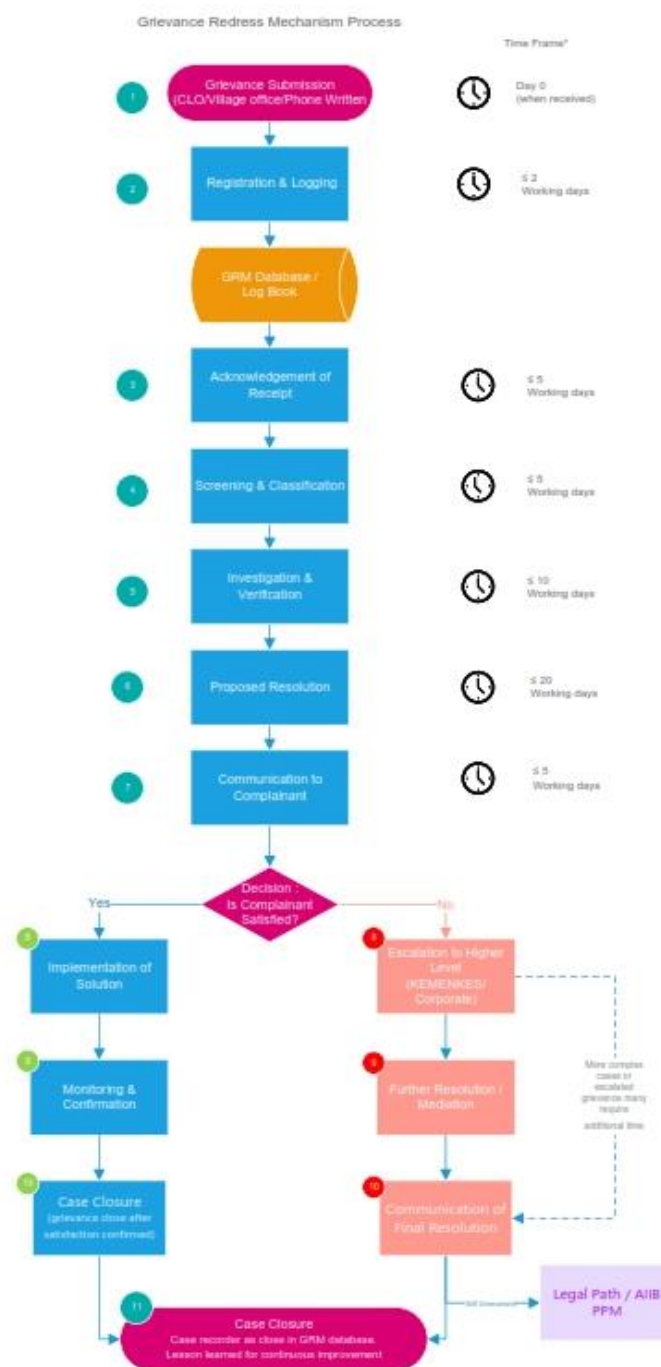
- General community complaints;
- Hospital service-related complaints associated with the project;
- Construction-related complaints;
- Labor and working condition grievances;
- Occupational health and safety concerns;
- Cultural heritage concerns;
- Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA), Sexual Harassment (SH), and Violence Against Children (VAC) complaints.

**Table 12.4. Complaint Handling Overview**

| Stage                               | Description                                                         | Timeframe                                       |
|-------------------------------------|---------------------------------------------------------------------|-------------------------------------------------|
| <b>Complaint Submission</b>         | Complaint submitted through available channels                      | Any time                                        |
| <b>Acknowledgement</b>              | Complaint acknowledged through the same communication channel       | Within 5 working days                           |
| <b>Categorization</b>               | Complaint categorized based on type and urgency                     | Upon receipt                                    |
| <b>Investigation and Resolution</b> | Relevant unit investigates and proposes corrective actions          | 10–20 working days depending on case complexity |
| <b>GBV/SEA/SH Cases</b>             | Immediate confidential referral to designated focal point           | Within 24 hours                                 |
| <b>Response to Complainant</b>      | Resolution communicated to complainant                              | As soon as resolved                             |
| <b>Closure</b>                      | Complaint formally closed upon agreement and completion of action   | After resolution confirmation                   |
| <b>Monitoring and Reporting</b>     | Grievance trends and resolution monitored and reported periodically | Ongoing                                         |

The GRM process flowchart provides an overview of the grievance handling mechanism established for the RSMM redevelopment project. The flowchart illustrates the stages of grievance submission, registration, acknowledgment, categorization, investigation, resolution, escalation process, and case closure, including indicative timelines for each stage.

The GRM flowchart is intended to ensure that all grievances are handled in a transparent, timely, accountable, and consistent manner in accordance with the project's Environmental and Social Management requirements and AIIB Environmental and Social Framework (ESF).



**Figure 12.1. Grievance Redress Mechanism Process Flowchart**

### Special Handling for Urgent Cases

The following complaints shall receive immediate response and priority handling:

- GBV/SEA/SH complaints;

- Serious occupational health and safety incidents or fatalities;
- Patient safety incidents;
- Cultural heritage damage incidents.

Initial response for such cases shall be undertaken within 24 hours.

#### **12.6.4.1 Redress Procedure for General Community Complaints**

Community grievances related to Project activities may be submitted through the existing RSMM complaint channels, which will serve as the primary entry point for the Project-level GRM. Additional project-specific procedures have been established to ensure effective handling of environmental and social issues associated with the redevelopment activities.

Community members affected by project activities, including construction impacts such as dust, noise, vibration, traffic disruption, restricted access, public safety risks, utility disturbances, or impacts related to cultural heritage buildings, may submit grievances through the available GRM channels.

##### **I. Project Management Unit (PMU) / Hospital Management**

Complaints may be submitted through the following channels:

- Telephone: 0251-8324024
- Email: [rsmm.bgr@gmail.com](mailto:rsmm.bgr@gmail.com)
- Website: <https://rsmmbogor.com>
- Whatsapp number: +62 812-9748-7447;
- Suggestion Boxes at hospital premises;
- Community liaison personnel;
- In-person reporting at the project office or hospital administration office.

Complaint receipt will be acknowledged within five (5) working days and targeted to be resolved within fifteen (15) working days.

##### **II. Ministry of Health / Higher Project Authority**

If the complainant is not satisfied with the resolution provided by the PMU or Hospital Management, the grievance may be escalated to the Ministry of Health or other designated higher project authority.

The grievance receipt will be acknowledged within five (5) working days and resolution efforts will be undertaken within fifteen (15) working days.

##### **III. Legal Resolution**

If the grievance remains unresolved after exhausting project-level mechanisms, complainants retain the right to pursue resolution through applicable judicial or administrative mechanisms in accordance with Indonesian laws and regulations.

#### **12.6.4.2 Redress Procedure for Complaints Related to Labor and Working Condition**

Project workers, including direct workers, contracted workers, subcontractors, and primary supply workers, may submit grievances concerning labor and working conditions, including:

- Occupational health and safety;
- Wage disputes;
- Working hours;
- Discrimination;
- Harassment;
- Unsafe working conditions;
- Worker accommodation issues;
- Employment termination;
- Freedom of association;
- GBV/SEA/SH incidents.

Worker grievances will be managed through the Project-level Grievance Redress Mechanism (GRM), which is integrated into RSMM's existing complaint handling system established under SOP No. OT.02.02/XXV.2/5107/2022 concerning Complaint Handling for Service Users. The existing RSMM complaint mechanism serves as the primary entry point for receiving and registering grievances, while contractor-level grievance procedures and additional Project-specific requirements are incorporated to address labour and working conditions in accordance with the AIIB Environmental and Social Framework (ESF).

##### **I. Employer Level**

Workers are encouraged to first report grievances through their immediate employer or contractor using the existing RSMM complaint channels or contractor-level grievance procedures. This constitutes the first level of grievance resolution before escalation to the Project Management Unit (PMU), where necessary.

Complaints may be submitted through:

- Direct reporting;
- Telephone;
- Email;
- Text message;
- Complaint boxes;
- Anonymous submission.

The employer shall acknowledge receipt and attempt resolution within fifteen (15) working days.

Urgent occupational health and safety issues shall be addressed immediately depending on the severity and urgency of the complaint.

## II. Project Management Unit (PMU)

If workers are not satisfied with the employer's resolution, the grievance may be escalated to the PMU.

The PMU will acknowledge receipt within five (5) working days and provide resolution within thirty (30) working days.

## III. Regional Manpower Office (Disnaker)

If internal resolution cannot be achieved, workers may submit complaints to the Regional Manpower Office (Disnaker) for mediation in accordance with Indonesian labor regulations. Workers will be provided with information regarding the contact details and complaint channels of the relevant Regional Manpower Office (Disnaker), including office address, telephone number, and email address, through worker induction programs, notice boards, and other communication media.

## IV. Industrial Relations Court

If the grievance remains unresolved, the complainant may pursue resolution through the Industrial Relations Court in accordance with prevailing laws and regulations.

### 12.6.4.3 Redress Procedure for GBV/SEA/SH Complaints

Complaints related to Gender-Based Violence (GBV), Sexual Exploitation and Abuse (SEA), Sexual Harassment (SH), and Violence Against Children (VAC) will be handled using a survivor-centered approach. Key principles include:

- Confidentiality;
- Safety;
- Respect;
- Non-discrimination;
- Informed consent.

Such complaints may be submitted through dedicated confidential channels to trained GBV focal points. All GBV/SEA/SH cases will:

- Receive immediate attention within 24 hours;
- Be handled confidentially;
- Avoid unnecessary disclosure of survivor identity;

- Be referred to appropriate support services where needed.

Information regarding available support services, referral pathways, and emergency contacts will be disclosed to project workers and stakeholders.

#### **12.6.4.4 Redress Procedure for Cultural Heritage Concerns**

Considering the existence of cultural heritage buildings and heritage structures within the RSMM area, complaints related to:

- Damage to heritage structures;
- Vibration impacts;
- Unauthorized modification;
- Restricted access to heritage assets;
- Non-compliance with conservation measures;
- Accidental findings during excavation; may be submitted through the project GRM.

Such grievances will be coordinated with:

- Hospital Management;
- Project Management Unit;
- Cultural Heritage Specialists;
- Relevant cultural heritage authorities.

The project will also implement a Chance Find Procedure during excavation and construction activities.

#### **12.6.5 Institutional Arrangement of GRM**

Implementation of the GRM for the RSMM redevelopment project involves several parties responsible for grievance receipt, handling, monitoring, and resolution.

The institutional arrangement is designed to ensure clear coordination among hospital management, the Project Management Unit (PMU), contractors, supervising consultants, and relevant authorities.

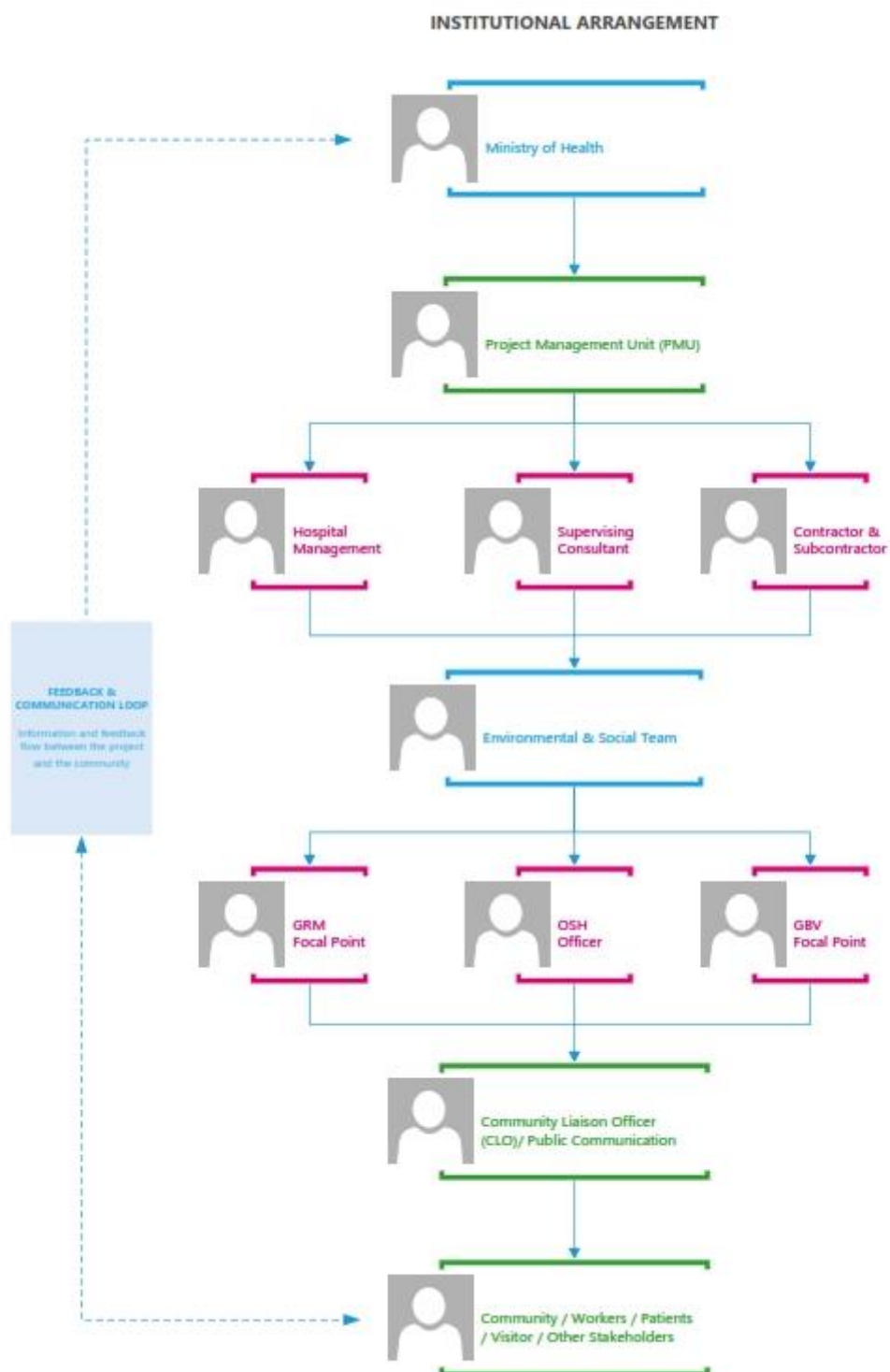


Figure 12.2. *Institutional Arrangement*

The Project Management Unit (PMU) will designate a dedicated GRM Focal Point to oversee the implementation of the Project-level Grievance Redress Mechanism (GRM). The GRM Focal Point will be responsible for coordinating the overall complaint handling process, including receiving and registering grievances, maintaining grievance records, forwarding complaints to the relevant parties, monitoring compliance with response timelines, coordinating complaint resolution, preparing periodic reports, and ensuring the effective operation of the Project GRM.

### Roles And Responsibilities

| Party                           | Roles and Responsibilities                                                                                                                                       |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ministry of Health              | Strategic oversight and handling of high-level grievance escalation                                                                                              |
| Project Management Unit (PMU)   | Coordination of GRM implementation, monitoring, reporting, and decision-making                                                                                   |
| Hospital Management             | Handling hospital operational complaints and internal coordination                                                                                               |
| Contractor/Subcontractor        | Handling construction-related complaints, labor issues, and occupational safety matters                                                                          |
| Supervising Consultant          | Monitoring GRM implementation and verifying corrective actions                                                                                                   |
| Environmental & Social Team     | Investigation of environmental and social issues and monitoring follow-up actions                                                                                |
| GRM Focal Point                 | Administering the Project GRM, maintaining grievance records, coordinating complaint handling, monitoring resolution timelines, and preparing grievance reports. |
| OHS Officer                     | Handling occupational health and safety complaints                                                                                                               |
| GBV Focal Point                 | Confidential handling of GBV/SEA/SH cases                                                                                                                        |
| Community Liaison Officer (CLO) | Community engagement and facilitation of grievance submission                                                                                                    |

### 12.6.6 Disclosure of GRM Information

Information regarding the GRM procedures, contact persons, grievance channels, and complaint submission methods will be disclosed through:

- Public consultation meetings;
- Notice boards;
- Hospital information centers;
- Project information materials;
- Worker induction programs;
- Contractor orientation sessions;
- Website and social media (if applicable).

The GRM procedure will also be incorporated into contractor bidding and contract documents to ensure contractors comply with the project grievance requirements.

#### **12.6.7 AIIB Project Affected Peoples Mechanism (PPM)**

In addition to the project-level GRM, project-affected people may submit complaints directly to the Asian Infrastructure Investment Bank (AIIB) through the Project-affected People's Mechanism (PPM) if they believe they have been or are likely to be adversely affected by AIIB's failure to implement its Environmental and Social Policy (ESP).

The Complaints-resolution, Evaluation and Integrity Unit (CEIU) is responsible for administering the PPM.

PPM Submission Online Form: <https://www.aiib.org/en/about-aiib/who-we-are/project-affected-peoples-mechanism/online-form/index.html>

### 13 REFERENCES

- Asian Infrastructure Investment Bank (AIIB). 2024. *Environmental and Social Framework (ESF)*. Beijing, China: Asian Infrastructure Investment Bank.
- Asian Infrastructure Investment Bank (AIIB). 2024. *Environmental and Social Policy (ESP)*. Beijing, China: Asian Infrastructure Investment Bank.
- Asian Infrastructure Investment Bank (AIIB). 2024. *Environmental and Social Standard 1: Environmental and Social Assessment and Management (ESS1)*. Beijing, China: Asian Infrastructure Investment Bank.
- Asian Infrastructure Investment Bank (AIIB). 2024. *Environmental and Social Standard 2: Involuntary Resettlement (ESS2)*. Beijing, China: Asian Infrastructure Investment Bank.
- Asian Infrastructure Investment Bank (AIIB). 2024. *Environmental and Social Standard 3: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities (ESS3)*. Beijing, China: Asian Infrastructure Investment Bank.
- Directorate of Highways. 2023. *Pedoman Kapasitas Jalan Indonesia*. Directorate of Highways, Ministry of General Works and Housing.
- International Finance Corporation (IFC). 2012. *Performance Standards on Environmental and Social Sustainability*. Washington, D.C.: International Finance Corporation.
- International Labour Organization (ILO). 1984. *Safety in the Use of Asbestos: ILO Code of Practice*. Geneva: International Labour Organization.
- International Labour Organization (ILO). 2022. *Occupational Safety and Health Management Systems: Guidelines for Implementation*. Geneva: International Labour Organization.
- International Council on Monuments and Sites (ICOMOS). 2011. *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties*. Paris: ICOMOS.
- United Nations Educational, Scientific and Cultural Organization (UNESCO). 2023. *Operational Guidelines for the Implementation of the World Heritage Convention*. Paris: UNESCO World Heritage Centre.
- World Bank Group. 2007. *Environmental, Health, and Safety Guidelines for Health Care Facilities*. Washington, D.C.: World Bank Group.
- World Bank Group. 2007. *General Environmental, Health and Safety Guidelines*. Washington, D.C.: World Bank Group.
- World Health Organization (WHO). 2014. *Safe Management of Wastes from Health-Care Activities*. 2nd Edition. Geneva: World Health Organization.
- World Health Organization (WHO). 2021. *Global Strategy on Digital Health 2020–2025*. Geneva: World Health Organization.
- Government of Indonesia. 2008. *Law No. 14 of 2008 concerning Public Information Disclosure*.
- Government of Indonesia. 2009. *Law No. 32 of 2009 concerning Environmental Protection and Management, as amended*.
- Government of Indonesia. 2010. *Law No. 11 of 2010 concerning Cultural Heritage*.
- Government of Indonesia. 2012. *Law No. 2 of 2012 concerning Land Acquisition for Development in the Public Interest, as amended*.
- Government of Indonesia. 2023. *Law No. 17 of 2023 concerning Health*.
- Government of Indonesia. 2021. *Government Regulation No. 22 of 2021 concerning Environmental Protection and Management*.
- Government of Indonesia. 2021. *Government Regulation No. 19 of 2021 concerning Land Acquisition for Development in the Public Interest*.
- Government of Indonesia. 2023. *Government Regulation No. 39 of 2023 concerning Amendments to Government Regulation No. 19 of 2021*.

- Government of Indonesia. 2018. *Presidential Regulation No. 62 of 2018 concerning Social Impact Management in Land Acquisition for National Development*.
- Government of Indonesia. 2023. *Presidential Regulation No. 78 of 2023 concerning Land Acquisition for Development in the Public Interest*.
- Ministry of Environment and Forestry (MoEF). 2009. *Ministerial Regulation No. 12 of 2009 concerning Rainwater Utilization*.
- Ministry of Public Works and Housing (MPWH). 2021. *Ministerial Regulation No. 18 of 2021 concerning Technical Guidelines for Building Demolition*.
- Ministry of Health (MoH). 2017. *Ministerial Regulation No. 34 of 2017 concerning Hospital Accreditation*.
- Ministry of Health (MoH). 1978. *Minister of Health Decree No. 135/MENKES/SK/IV/1978 concerning the Organizational Structure and Procedures of Bogor Central Mental Hospital*.
- Ministry of Health (MoH). 2002. *Minister of Health Decree No. 266/MENKES/SK/IV/2002 concerning the Renaming of Bogor Central Psychiatric Hospital to Dr. H. Marzoeki Mahdi Hospital*.
- Dr. H. Marzoeki Mahdi Hospital (RSMM). 2025. *Hospital Service Statistics Report 2025*. Bogor: RSMM.
- Dr. H. Marzoeki Mahdi Hospital (RSMM). 2025. *Hospital Bed Capacity and Healthcare Services Data*. Bogor: RSMM.
- Dr. H. Marzoeki Mahdi Hospital (RSMM). 2025. *Solid Waste and Hazardous Waste Management Records*. Bogor: RSMM.
- Dr. H. Marzoeki Mahdi Hospital (RSMM). 2025. *Wastewater Treatment Plant Operational Report*. Bogor: RSMM.
- Dr. H. Marzoeki Mahdi Hospital (RSMM). 2026. *RSMM Development Masterplan*. Bogor: RSMM.
- Dr. H. Marzoeki Mahdi Hospital (RSMM). 2026. *Inventory of Existing Buildings and Facilities*. Bogor: RSMM.
- Dr. H. Marzoeki Mahdi Hospital (RSMM). 2026. *Asbestos-Containing Materials Inventory and Preliminary Assessment*. Bogor: RSMM.
- Dr. H. Marzoeki Mahdi Hospital (RSMM). 2026. *Hospital Relocation and Service Continuity Plan During Construction*. Bogor: RSMM.
- Dr. H. Marzoeki Mahdi Hospital (RSMM). 2026. *Teaching Hospital and Research Hub Development Program*. Bogor: RSMM.
- Statistics Indonesia (BPS). 2025. *Bogor Municipality in Figures 2025*. Bogor: Statistics Indonesia.
- Statistics Indonesia (BPS). 2025. *West Java Province in Figures 2025*. Bandung: Statistics Indonesia.
- Ministry of Health (MoH). 2025. *Indonesia Health Profile 2024*. Jakarta: Ministry of Health.
- Bogor City Environmental Agency (DLH). 2019. *Environmental Feasibility Decision No. 660.1.45/160-DLH*. Bogor.
- Ministry of Environment and Forestry (MoEF). 2024. *Environmental Feasibility Decision No. 492 of 2024 for RSMM Development Activities*. Jakarta.
- Dr. H. Marzoeki Mahdi Hospital. 2019. *History of Dr. H. Marzoeki Mahdi Hospital*. Available at: <https://www.rsmm.go.id>

## 14 ANNEXES

### 14.1 ANNEX A – Labor Management Plan

#### A.1 Purpose and Scope

This Labor Management Plan has been developed to ensure that all workforce management practices in this psychiatric hospital project comply with national labor laws (Job Creation Law No. 6/2023) and the AIIB Environmental and Social Standards (ESS 1). This document applies to direct employees, contract workers, and third parti

#### A.2 Categorization of Project Workers (Overview of Labor Use)

Workers on this psychiatric hospital project are divided into several main categories:

- Direct Workers: Hospital management staff, psychiatrists, nurses, psychologists, and administrative staff of the Project Management Unit (PMU).
- Contracted Workers: Construction workers/civil contractors, mechanical-electrical (ME) installation subcontractors, as well as security service providers specifically for the psychiatric hospital and cleaning staff.
- Primary Supply Workers: Workers from vendors supplying specialized psychiatric medical equipment, pharmacy systems, and primary building materials.

#### A.3 SPECIFIC OCCUPATIONAL RISK ASSESSMENT (KEY LABOR RISKS)

In addition to general construction risks, psychiatric hospital projects pose specific risks:

- Psychiatric-Specific Occupational Health and Safety Risks: Exposure to physical violence or acute outbursts from patients with mental disorders directed at medical staff or construction workers (if the project involves the renovation of an active facility).
- Worker Psychological Burden (Caregiver & Staff Burnout): Extreme mental exhaustion among medical staff due to the high emotional burden of caring for long-term inpatients.
- Substance Abuse and Needle Stick Injuries: Risk of contamination from sharp medical waste or exposure to addictive substances (ZONANAPZA).
- General Risks: Inadequate overtime pay, gender discrimination, sexual violence (SEA/SH), child labor, and workplace accidents in construction areas

#### A.4 TERMS AND CONDITIONS OF EMPLOYMENT

- Written Contract: All workers (including casual daily construction workers) must have a clear written employment contract specifying working hours, minimum wage, and leave entitlements in a language they understand.

- Fair Wages & Rest Periods: Timely payment of wages (which must not be below the regional minimum wage [UMK] or provincial minimum wage [UMP]), along with overtime pay, maternity leave, and social security (BPJS Ketenagakerjaan and BPJS Kesehatan).
- Equality and Anti-Discrimination: Competency-based recruitment without regard to gender, race, religion, or disability.

#### A.5 OCCUPATIONAL HEALTH AND SAFETY (OHS)

The OHS plan is based on the World Bank Group's EHS Guidelines and national regulations:

- Provision of specific PPE: masks, medical gloves, puncture-resistant syringe containers, as well as helmets and protective footwear for construction workers.
- Patient-Staff Safety Procedures: Strict zoning between physical construction areas and active patient care zones (e.g., Psychiatric Intensive Care Unit/PICU). Aggression
- Management Training: Medical staff and security personnel must be trained in verbal de-escalation methods and safe physical restraint techniques when dealing with patients experiencing tantrums to prevent injury to both workers and patients.

#### A.6 WORKER GRIEVANCE REDRESS MECHANISM (GRM)

An internal GRM separate from the general public's complaints:

- Accessibility: Provide physical suggestion boxes, dedicated WhatsApp numbers, or an email address for complaints.
- Principle of Anonymity: Workers can report violations (e.g., intimidation by supervisors or unilateral wage deductions) anonymously without fear of retaliation.
- Prevention of Sexual Harassment and Exploitation (SHE): A confidential and secure dedicated channel to address cases of Gender-Based Violence (GBV) as well as Sexual Harassment and Exploitation in the hospital workplace.

#### A.7 CODE OF CONDUCT

Every employee is required to sign the Code of Conduct, which strictly prohibits:

- Discrimination or violence of any kind against fellow employees or patients with mental disorders.
- Employing minors under the age of 18 and all forms of forced labor.
- Bringing or consuming narcotics or alcohol on the psychiatric hospital premises.

## 14.2 ANNEX B – Asbestos Management Plan Framework

### B.1. Purpose and Scope

This Asbestos Management Framework (AMF) establishes the policy commitments, procedural requirements, technical standards, institutional responsibilities, and monitoring and reporting obligations for the identification, assessment, handling, removal, transport, and disposal of asbestos-containing materials (ACM) in connection with the Development of Dr. H. Marzoeki Mahdi Psychiatric Hospital (the Project). It is prepared as a standalone annex to the ESIA-ESMP and forms part of the Project's Environmental and Social Management System (ESMS).

- Pre-demolition: survey, sampling, laboratory confirmation, and risk assessment of all structures within the demolition footprint;
- Demolition / construction preparation: ACM removal by a licensed abatement contractor before any structural works commence; and
- Ongoing construction: monitoring, chance-find procedures, and waste management throughout the construction period.

The AMF does not address asbestos-related risks in the operational phase of the new buildings, as no ACM will be incorporated in the new construction, consistent with the Project's Green Hospital strategy and AIB requirements.

### B.2. Project Context and ACM Risk Basis

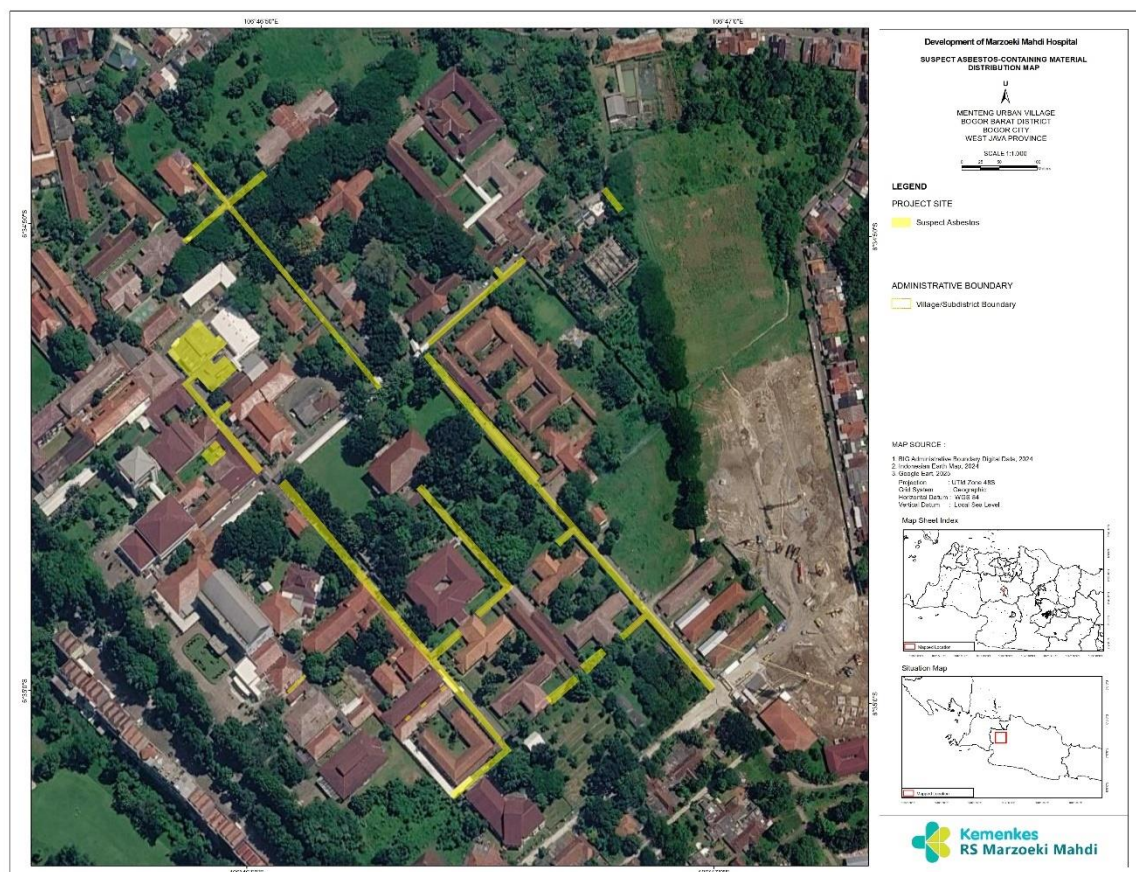
#### a. Preliminary Identification of ACM Risk During ESIA Study

Preliminary identification was conducted by collecting and reviewing the inventory of hospital's material. It is preliminary identified that asbestos containing material are in the form of corrugated asbestos roofing material which was found in several buildings, as shown in the table below.

| No. | Building Name   | Building Size (m <sup>2</sup> ) | Roof Material Type  | *Estimation of Asbestos Volume (m <sup>3</sup> ) |
|-----|-----------------|---------------------------------|---------------------|--------------------------------------------------|
| 1.  | Stoom Boiler    | 98                              | Corrugated Asbestos | 0,49                                             |
| 2.  | EEG             | 249                             | Corrugated Asbestos | 1,245                                            |
| 3.  | Kantin Koperasi | 294                             | Corrugated Asbestos | 1,47                                             |

|                 |                             |          |                     |       |
|-----------------|-----------------------------|----------|---------------------|-------|
| 4.              | New Psychiatric Clinic Hall | 15       | Corrugated Asbestos | 0,075 |
| 5.              | Subadra – Dewi Amba Hall    | 48       | Corrugated Asbestos | 0,24  |
| 6.              | Hospital Hall               | 1296     | Corrugated Asbestos | 6,48  |
| 7.              | Bangau – Nurse Station Hall | 64       | Corrugated Asbestos | 0,32  |
| 8.              | Bisma – Parikesit Hall      | 69       | Corrugated Asbestos | 0,345 |
| Total Area Size |                             | 2.133,00 | Total Volume        | 10,67 |

A follow-up survey was conducted on 26<sup>th</sup> of June 2026 to visually identify the asbestos material and it's condition. Based on survey result, an mapping of asbestos material is prepared, as can be seen in the following figure.



**Figure 14.1. Suspected Asbestos Containing Material Mapping**



**Figure 14.2. Asbestos Containing Material Identified During Visual Survey**

**b. Limitation of Asbestos Material Identification Survey During ESIA Study**

A detailed identification of Asbestos-Containing Material requires a laboratory identification of material sample, which unavailable to achieve during the ESIA study. So a preliminary, indicative identification was conducted, while a more detailed identification will be recommended in this framework for contractor pre-demolition measure.

AIIB Environmental and Social Policy provides for a two-stage approach: (1) identification and framework-setting at the ESIA stage, and (2) a mandatory confirmed survey with specialist abatement prior to the commencement of physical works. This AMF fulfils stage (1); stage (2) is a contractual pre-condition to demolition under this Project.

**B.3. Regulatory and Standards Framework**

**a. Indonesian National Regulation**

| Regulation                                                          | Relevance to this AMF                                                                                                                                                         |
|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Permen No. 3/1985 (Ministry of Manpower)                            | Bans the use and import of blue asbestos (crocidolite) in Indonesia. Any crocidolite identified during the ACM survey must be treated as Priority ACM with immediate removal. |
| Law No. 32/2009 on Environmental Protection and Management (UUPPLH) | Parent law governing hazardous substance management, including asbestos as a B3 material. Establishes the regulatory framework for B3 waste licensing.                        |

|                                                                                                          |                                                                                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PP No. 22/2021 on Environmental Management (replacing PP 101/2014)                                       | Governing regulation for B3 waste handling, storage, transport, manifest system, and disposal. ACM waste is classified as B3 Category 1 (toxic, carcinogenic); all removal, bagging, transport, and disposal must comply with PP 22/2021 procedures including manifests (dokumen limbah B3). |
| PerMenLHK No. 6/2021 on Procedures and Requirements for the Management of Hazardous and Toxic Waste (B3) | Regulates the procedure and permit requirement for management of hazardous waste.                                                                                                                                                                                                            |
| PermenLHK No. 9/2024 on Updated B3 Waste Management                                                      | Updated procedural guidance for B3 waste management, including designation of licensed transporters and disposal facilities. All ACM transporters and receiving facilities must hold current licences under this regulation.                                                                 |
| Permen PUPR No. 18/2021 on Building Demolition Standards                                                 | Requires a pre-demolition review stage (kajian pembongkaran) as part of the demolition approval process. This AMF and the Phase 2 ACM Survey Report constitute the hazardous-materials component of that review.                                                                             |
| Permenaker No. 5/2018 on OHS in the Workplace                                                            | Establishes occupational safety requirements for hazardous substance handling, including the requirement for personal protective equipment (PPE), training, medical surveillance, and air monitoring for workers handling B3 substances including asbestos.                                  |
| Government Regulation on Manpower Safety and Health                                                      | Requires employer notification to Dinas Tenaga Kerja (Disnaker) of workplaces handling hazardous materials. The licensed abatement contractor must notify the relevant Disnaker office before commencing ACM removal works.                                                                  |

#### b. AIIB and International Standards

| Standard / Guideline                                                                          | Relevance                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AIIB Environmental and Social Policy (ESP) and Environmental and Social Standard 1 (ESS1)     | Requires identification and management of asbestos and other hazardous materials in projects involving demolition of existing structures; mandates GIIP for all hazardous materials management; requires contractor competence verification; and requires disclosure and monitoring.                                                 |
| IFC Performance Standard 1 (PS1) — Assessment and Management of E&S Risks                     | Supports the two-stage approach to ACM: framework-setting at ESIA and confirmed survey with specialist management before physical works.                                                                                                                                                                                             |
| IFC/World Bank Environmental Health and Safety (EHS) Guidelines — Construction and Demolition | Specifies GIIP for ACM management in construction and demolition, including mandatory survey before demolition; wet removal methods; HEPA-filtered negative-pressure enclosures; air monitoring; double-bag and label disposal; independent clearance air test.                                                                      |
| WHO Chrysotile Asbestos (2014)                                                                | Confirms that all forms of asbestos, including chrysotile (which is not banned in Indonesia), are carcinogenic. Recommends elimination as the preferred approach; where this is not immediately possible, adopts a precautionary management framework.                                                                               |
| IARC Monograph — All Forms of Asbestos (2018)                                                 | International Agency for Research on Cancer classification of all asbestos types as Group 1 (carcinogenic to humans), including mesothelioma, lung, larynx, and ovarian cancers. This classification underpins the Unlikely/Very High/Major significance rating assigned to ACM release in the Project impact matrix (Impact A.3.1). |
| ISO 16000-7 — Indoor Air Quality: Sampling Strategies for Asbestos                            | Technical standard for airborne asbestos fiber monitoring methodology, applicable to clearance testing after removal and to routine air monitoring during construction.                                                                                                                                                              |
| WHO Air Quality Guidelines (2000) — Asbestos                                                  | No safe level of asbestos fiber exposure exists; fibers should be reduced to as low as reasonably practicable (ALARP). Action levels adopted in this AMF are set at the most protective end of the range consistent with GIIP.                                                                                                       |
| Internal Labor Organization. <i>Safety in the use of asbestos: an ILO Code of Practice</i>    | This guideline provides the guideline procedure of handling of asbestos material in different form and sources.                                                                                                                                                                                                                      |

#### B.4. Phase 1 – Desktop Review and Presumptive Risk Assessment (Finished)

The Asbestos-Containing Material (ACM) Desktop Review serves as the foundational, non-intrusive phase of the Asbestos Management Plan. The primary objective is to aggregate, analyze, and cross-reference all available historical data regarding the hospital's infrastructure to map out potential asbestos risks before any physical sampling takes place.

For this assessment, the primary benchmark dataset utilized is "Data Penggunaan Atap Banguna RSJMM ", which outlines building names, primary functions, structural conditions, construction years ("*Tahun Pembangunan*"), and explicit roofing materials for the facility.

A follow up study to visually confirm the presence of asbestos containing material was conducted on 26<sup>th</sup> June 2026. From the survey, a mapping of potential asbestos containing material was prepared.

#### B.5. Phase 2 – Confirmed ACM Survey (Pre-Demolition Mandatory) (Unfinished)

A Mandatory Pre-Demolition Asbestos-Containing Material (ACM) Survey is conducted as a mandatory procedure before the demolition of ACM suspected material is conducted, this survey consists of:

1. Thorough scoping of possible ACM, including breaking into walls, fabrics, and pipe suspected of containing ACM. This procedure is specifically done in ACM prone infrastructures and building. In RSMM case, pipe lining in boiler and HVAC.
2. Collection of samples to be analyzed in laboratory, consisting of:
  - Regulated Bulk Sampling: The surveyor wets the target material (to prevent fiber release), cuts out a small physical piece (approx. 2x2 cm), and seals it in a double-bagged, uniquely numbered container.
  - Decontamination: The sampling point is immediately sealed with a sealant (like PVA glue) or duct tape to prevent fiber leakage.
  - Laboratory Methodology: The lab uses advanced microscopy techniques to analyze the samples:
    - PLM (Polarized Light Microscopy): The standard method used to identify the specific mineral crystalline structure of the asbestos.
    - TEM (Transmission Electron Microscopy): Used if samples are highly compressed or complex, using electron beams to detect microscopic fibers that optical microscopes miss.
  - The Lab Certificate: The laboratory issues a legally binding certificate detailing exactly:

- Whether Asbestos was Detected or Not Detected.
- The Type of asbestos found (e.g., Chrysotile [white], Amosite [brown], or Crocidolite [blue]).

#### B.6. Phase 3 – ACM Removal or Abatement (Unfinished)

ACM removal or abatement for RSMM development are concluded in a series of steps. Since most ACM material identified in the RSMM area are mostly corrugated asbestos roofing. This procedure is suited for removal of corrugated asbestos, which described as the following:

- Step A: Engineering Controls & Isolate the Zone
  - Controlled Area Setup: The work zone is entirely boarded off with heavy polythene plastic sheeting to form an airtight enclosure.
  - Negative Pressure Units (NPU): High-efficiency particulate air (HEPA) ventilation systems are hooked up to the enclosure. These draw clean air into the tent but trap any escaping fibers inside massive filters, ensuring that air pressure forces everything inward.
  - Decontamination Showers: Workers can only enter and exit through a three-stage airlock decontamination chamber, where they must vacuum off their suits and shower thoroughly before putting on regular clothes.
- Step B: Safe Wet-Method Stripping
  - Suppression Sprays: Workers use specialized chemical surfactants or amended water to completely saturate the asbestos before touching it. Wet asbestos cannot break into a friable dust cloud.
  - Careful Dismantling: Hand tools are prioritized over power tools. For example, screws holding down the asbes gelombang roof sheets are carefully unscrewed one by one—never smashed, broken, or dropped from the roof.
- Step C: Double-Bagging & Hazardous Coding
  - As soon as the material is detached, it is placed directly into heavy-duty polythene bags, sealed with duct tape, and then placed into a second bag (double-bagged).
  - Each bag must display explicit hazard warnings (e.g., "Asbestos Hazard / Toxic Material").

#### B.7. Asbestos Chance Find Procedure

After removal of ACM from suspected ACM containing infrastructures, building demolition can commence. However a chance of finding undetected ACM during construction should not be ignored.

An Asbestos Chance Find Procedure (CFP) is a strict, reactive operational protocol designed for construction workers, maintenance engineers, and facility teams. It dictates exactly what to do if unexpected, unmapped, or suspect Asbestos-Containing Material (ACM) is accidentally uncovered during routine maintenance, renovations, or excavation.

In an sprawling historical facility like RS dr. Marzoeqi Mahdi—where hidden layers of infrastructure date back to 1882—a Chance Find Procedure acts as the hospital's frontline defense to prevent an accidental, campus-wide fiber contamination event.

The Asbestos Chance Find Procedure for Dr. H. Marzoeqi Mahdi Hospital are described as the following:

1. Immediate Stop
  - Stop All Work: All mechanical tools, drilling, or manual demolition in that immediate zone must cease instantly. Do not attempt to clear the debris or investigate further.
  - Evacuate the Area: All personnel must immediately leave the room or localized zone to minimize inhalation risk.
2. Isolate and Contain the Zone
  - Lock Down the Room: Close all doors and windows. If possible, tape plastic sheets over doorways or openings.
  - Shut Off Ventilation: Immediately turn off localized air conditioning units (AC split or central HVAC vents) servicing that area to prevent fibers from being sucked into the hospital's wider ventilation system.
  - Post Warning Signs: Place explicit hazard signs at the entrance, such as: "*Dilarang Masuk - Area Diisolasi (Dugaan Temuan Asbes)*".
3. Formal Notification & K3RS Mobilization
  - Notify K3RS & IPSRS: The Hospital Occupational Health and Safety Committee (K3RS) and Facilities Management must be dispatched to the scene.
  - Log the Incident: Record the precise location, time, building number, and a description of the material encountered.
4. Worker Decontamination (If Exposed)
  - Do Not Walk Through the Hospital: The worker must not walk through active patient wards wearing contaminated clothing.
  - Isolate Gear: Overalls, dust masks, and gloves must be carefully stripped off inside the isolated zone, double-bagged in plastic, and sealed.

- Personal Wash: The worker should immediately wash their hands, arms, and face with water to rinse away any clinging fibers.
5. Professional Assessment & Lab Sampling
- Deploy a Specialist: An environmental consultant or industrial hygienist is brought into the sealed zone wearing proper PPE.
  - Take a Bulk Sample: The specialist will wet the material and cut a tiny snippet for analysis.
  - KAN-Accredited Lab Testing: The sample is dispatched immediately to a laboratory for definitive analysis via Polarized Light Microscopy (PLM).
6. Resolution Matrix
- Work can only resume once a formal laboratory certificate dictates the next steps:
    - Scenario A: Lab Results Negative (Not Asbestos)  
If the lab confirms the material is harmless (e.g., modern rockwool or standard fiberglass insulation), the isolation barriers are removed, the CFP is formally closed, and standard construction or maintenance work is legally allowed to restart.
    - Scenario B: Lab Results Positive (Confirmed ACM)  
If the lab confirms the presence of asbestos, the Chance Find Procedure transitions directly into an active Abatement Protocol:
      - The material is officially added to the hospital's permanent Asbestos Risk Register.
      - A licensed environmental abatement contractor is brought in to set up negative pressure enclosures and safely remove or encapsulate the hazard.
      - Standard construction workers are only allowed back into the area once an independent Air Clearance Certificate is issued.

#### B.8. Roles and Responsibility

| No. | Roles                  | Responsibilities                                                                                                                                                                                                                                                    |
|-----|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.  | Contractor             | <ul style="list-style-type: none"> <li>• Conduct ACM assessments</li> <li>• Prepare and implement the AMF</li> <li>• Provide PPE and training</li> <li>• Implement control measures</li> <li>• Manage ACM waste</li> <li>• Maintain all required records</li> </ul> |
| 2.  | Supervision Consultant | <ul style="list-style-type: none"> <li>• Review ACM-related documentation</li> <li>• Monitor implementation</li> <li>• Verify compliance</li> <li>• Report non-compliance to the PIU</li> </ul>                                                                     |

|    |                                           |                                                                                                                                                                                                                                                 |
|----|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3. | Dr. H. Marzoeki Mahdi Hospital Management | <ul style="list-style-type: none"> <li>• Coordinate with the Contractor</li> <li>• Support protection of hospital operations</li> <li>• Facilitate access arrangements</li> <li>• Ensure protection of patients, staff, and visitors</li> </ul> |
| 4. | Project Implementation Unit               | <ul style="list-style-type: none"> <li>• Oversee implementation and ensure consistency with the ESMP, ESIA commitments, and applicable regulatory requirements</li> </ul>                                                                       |

**B.9. Indicative Budget**

| No. | Category                      | Detailed Description                                                                                                                                       | Indicative Budget (IDR)                                              |
|-----|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| 1.  | Comprehensive Sampling Survey | Certified field engineers mapping the facility and physically taking bulk samples.                                                                         | \$5,000 – \$15,000+ (Highly dependent on room count)                 |
| 2.  | Laboratory Sample Analysis    | PLM (Polarized Light Microscopy) or TEM testing per individual sample container.                                                                           | \$25 – \$75 per sample (Estimation 50+ samples for a large facility) |
| 3.  | Baseline Air Quality Testing  | Phase Contrast Microscopy (PCM) testing to confirm no airborne fibers are currently present in high-risk zones (like Selasar tunnels or the boiler house). | \$1,500 – \$3,500                                                    |
| 4.  | AMP Authoring & Software      | Technical writing of the institutional plan, emergency protocol workflow, and digital register hosting.                                                    | \$2,000 – \$5,000                                                    |
| 5.  | Staff Training & Awareness    | Basic Asbestos Awareness instruction for hospital facilities management, cleaning, and maintenance personnel.                                              | \$1,000 – \$2,500                                                    |

For removal of non-friable Abatement (Corrugated Asbestos Roof Panels), budget for removal is estimated at \$25 to \$80 per square meter to carefully unbolt, encapsulate, transport, and legally dispose of.

**B.10. Implementation Timeline****Table 14.1. Indicative Timeline of Asbestos Management Plan Framework Implementation**

| No. | Phase                                                                                                                                                                                                               | Timeline    |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 1.  | Phase 1: Preparation & Scope Mapping<br>Finalizing the preliminary visual audit (current stage), aggregating your historical building logs, and mapping out structural risk zones.                                  | Weeks 1-3   |
| 2.  | Phase 2: Intrusive Sampling & Laboratory Testing<br>Certified industrial hygienists core-sample the suspect asbes gelombang roofing, older vinyl tiles, boiler insulation, and wall plaster.                        | Weeks 4-8   |
| 3.  | Phase 3: material Assessment & Risk Register<br>Merging lab data with building conditions to run a priority risk algorithm (combining material friability, current condition, and likelihood of human disturbance). | Weeks 9-12  |
| 4.  | Phase 4: Compiling & Implementing the Final AMF<br>Drafting the formal operational policy document. This details emergency protocols for accidental fiber release, safe                                             | Weeks 13-16 |

|  |                                                                                                            |  |
|--|------------------------------------------------------------------------------------------------------------|--|
|  | maintenance guidelines for engineers, and safe-handling guidelines for upcoming roof remediation projects. |  |
|--|------------------------------------------------------------------------------------------------------------|--|

## 14.3 ANNEX C – Framework for Preparation of the Construction Environmental and Social Management Plan (CESMP)

### C.1 INTRODUCTION & OBJECTIVE OF THE FRAMEWORK

This Framework serves as a mandatory guideline for the Contractor to develop a site-specific, measurable, and actionable CESMP. The primary objective is to mitigate adverse environmental and social impacts during the physical construction phase of the Psychiatric Hospital (RSJ), while concurrently safeguarding the safety of active patients, medical staff, workers, and the surrounding community.

### C.2 LEGAL FRAMEWORK AND REFERENCE STANDARDS

The developed CESMP must comply with and harmonize the following two pillars of standards:

- a. International Standards (AIIB ESF):
  - Environmental and Social Standard 1 (ESS 1): Environmental and Social Assessment and Management.
  - World Bank Group General EHS Guidelines & EHS Guidelines for Health Care Facilities.
- b. National Regulations of Indonesia:
  - Law No. 6 of 2023 on Job Creation (UU Cipta Kerja).
  - Government Regulation (PP) No. 22 of 2021 regarding the Implementation of Environmental Protection and Management.
  - Ministry of Environment and Forestry Regulation (PermenLHK) No. 4 of 2021 regarding the List of Businesses and/or Activities Mandatory to Have an AMDAL, UKL-UPL, or SPPL.
  - Ministry of Health Regulation (Permenkes) No. 2 of 2023 on the Implementation Regulations of PP No. 66 of 2014 concerning Environmental Health.

### C.3 IMPACT ASSESSMENT & SPECIFIC MITIGATION PLANS (PSYCHIATRIC HOSPITAL CONSTRUCTION)

The Contractor is required to detail operational action plans (mitigations) for the following critical aspects within the CESMP:

- A. Mitigation of Physical Environmental Impacts Hazardous (B3) Medical & Construction
  - Waste Management (PP 22/2021): If construction occurs within an active hospital compound, the contractor must establish strict physical separation between construction domestic waste disposal routes and infectious/sharp medical waste streams.

- Dust and Air Quality Control: Installation of a dust barrier (safety netting/tarpaulin) with a minimum height of 3 meters around the perimeter of the construction zone to prevent dust pollution from entering patient inpatient wards.
- Noise and Vibration Control: Restrictions on the operating hours of heavy machinery. Psychiatric patients (especially in acute units/Psychiatric Intensive Care Units) are highly sensitive to constant noise stimulation, which can trigger tantrums or extreme anxiety.

#### B. Social Welfare & Occupational Health and Safety (OHS)

- Physical Zoning Separation (Psychiatric Zone vs. Work Area): The contractor must formulate a Site Layout Plan that physically segregates construction worker access from patient service areas (Psychiatric Services Zone, Substance Abuse/NAPZA Zone, etc.) to prevent unregulated interactions.
- Occupational Health and Safety (OHS) Management: Provision of standard construction sector PPE and full compliance with the Labor Management Plan (LMP), including fundamental labor rights in accordance with AIIB ESS 1.
- Prevention of SEA/SH (Sexual Exploitation, Abuse, and Harassment): Mandatory signing of a Code of Conduct by all workers to prevent gender-based violence and harassment toward fellow workers as well as vulnerable patients.

#### C.4 MANDATORY SUB-PLANS

The Contractor must append several site-specific plans within the CESMP, including:

1. Traffic Management Plan (TMP): Regulating material logistics routes to ensure they do not obstruct ambulance access and the hospital's Emergency Room (ER) entrance.
2. Waste and Spoil Management Plan: Plans for managing excavated soil and construction debris.
3. Emergency Response Plan (ERP): Joint emergency procedures between the hospital management and the contractor in the event of fires, earthquakes, or extraordinary incidents (e.g., mass patient evacuation during a construction crisis).
4. Worker-Grievance Redress Mechanism (Worker-GRM): An internal grievance handling mechanism for the construction workforce.

#### C.5 COMMUNITY GRIEVANCE REDRESS MECHANISM (COMMUNITY GRM)

In accordance with AIIB mandates, the CESMP must include a Grievance Redress Mechanism procedure for the public that is:

1. Easily accessible to residents living near the hospital as well as patients' family representatives.

2. Equipped with dedicated reporting channels (suggestion boxes, WhatsApp groups, or a grievance post at the project gate).
3. Structured with a clear escalation timeframe for resolution (e.g., noise complaints must be responded to within 1 times 24 hours).

#### C.6 INSTITUTIONAL ARRANGEMENT, MONITORING, AND REPORTING

1. Key Personnel: The Contractor must appoint a nationally certified Environmental Officer (EO) and HSO/HSE Officer who will hold full responsibility on-site.
2. Monitoring Matrix: The CESMP must feature a environmental monitoring plan table (detailing When, Where, How, and Who will monitor water quality, air quality, noise levels, and social compliance).
3. Reporting: The Contractor is required to submit regular (monthly) Environmental and Social Monitoring Reports to the Hospital's PMU (Project Management Unit), which will subsequently be reported periodically to the AIIB.

## 14.4 ANNEX D – Cultural Heritage Management Plan (CHMP) Framework

### A. Introduction

#### 1. Background

Rumah Sakit Dr. H. Marzoeqi Mahdi (RSMM) Bogor is Indonesia's oldest psychiatric hospital, originally established in 1882 as *Krankzinnigengesticht te Buitenzorg* during the Dutch colonial period. The hospital complex contains several historic buildings that reflect the evolution of mental healthcare services in Indonesia and retain important historical, architectural, and social values.

Based on preliminary information obtained from the Bogor City Tourism and Culture Office (Dinas Pariwisata dan Kebudayaan Kota Bogor), several buildings within the RSMM complex have been identified as Objects Suspected as Cultural Heritage (Objek Diduga Cagar Budaya – ODCB) and are currently undergoing further review by the relevant authorities.

The proposed hospital development project will be implemented within the existing hospital complex. Although the identified ODCB buildings will not be demolished, modified, or directly affected by the Project, construction activities may generate indirect impacts, including vibration, dust, increased traffic movement, and accidental physical damage.

This Cultural Heritage Management Plan (CHMP) Framework has therefore been prepared to establish a systematic approach for protecting identified cultural heritage assets throughout Project implementation..

#### 1. Objectives

The objectives of the CHMP are to:

- Protect identified cultural heritage assets from direct and indirect Project impacts;
- Ensure that Project activities are undertaken in a manner consistent with Indonesian cultural heritage regulations and AIIB Environmental and Social Standards;
- Prevent physical damage to heritage buildings arising from demolition, excavation, piling, construction traffic, and vibration-generating activities;
- Establish monitoring and reporting procedures for heritage protection;
- Define responsibilities for cultural heritage management during Project implementation; and
- Establish procedures for managing previously undiscovered cultural heritage resources encountered during construction.

## 2. Objectives

This CHMP Framework applies to:

- Identified ODCB buildings located within the RSMM complex;
- Heritage-related features associated with the historical development of the hospital;
- Construction activities occurring within the Project Area of Influence (AoI);
- Potential archaeological or historical materials that may be encountered during excavation activities.

## B. Regulatory Framework

### 1. National Regulation

| Regulation                                             | Relevance                                                                |
|--------------------------------------------------------|--------------------------------------------------------------------------|
| <b>Law No. 11 of 2010 on Cultural Heritage</b>         | Protection, conservation, and utilization of cultural heritage resources |
| <b>Government Regulation No. 1 of 2022</b>             | Procedures for cultural heritage preservation and management             |
| <b>Minister of Public Works Regulation No. 19/2021</b> | Technical guidance for preservation of heritage buildings                |
| <b>Law No. 5 of 2017 on Cultural Advancement</b>       | Protection of cultural values and heritage resources                     |

### 2. AIIB Environmental and Social Framework

Under AIIB ESS1, projects are required to:

- Identify and assess cultural heritage resources;
- Avoid or minimize impacts on cultural heritage;
- Consult relevant authorities and stakeholders;
- Implement mitigation measures proportionate to identified risks;
- Apply Chance Find Procedures during excavation works.

## C. Cultural Heritage Baseline

### 1. Identified Heritage Assets

Based on information provided by RSMM and preliminary communication with the Bogor City Tourism and Culture Office, the following assets have been identified as cultural heritage resources within the Project area.

| No. | Heritage Asset                                  | Current Function                   | Status |
|-----|-------------------------------------------------|------------------------------------|--------|
| 1   | Gedung Rama                                     | NAPZA Rehabilitation Unit          | ODCB   |
| 2   | Gedung Candradimuka (Medical Check-Up Building) | Integrated Medical Check-Up Centre | ODCB   |

|   |                                                   |                                    |                                            |
|---|---------------------------------------------------|------------------------------------|--------------------------------------------|
| 3 | Gedung Administrasi Pasien & Dental               | Administration and Dental Services | ODCB                                       |
| 4 | Historic Bell associated with Gedung Candradimuka | Heritage feature                   | Historical element within hospital complex |

## 2. Heritage Significance

The identified buildings represent surviving elements of the original psychiatric hospital complex established in 1882. They possess historical significance associated with the development of mental healthcare services in Indonesia and retain architectural characteristics typical of colonial-era institutional buildings.

## D. Risk Identification and Impact Assessment

### Cultural Heritage Risk Matrix

| Code | Potential Impact                        | Impact Mechanism                                          | Heritage Receptor        | Risk Level |
|------|-----------------------------------------|-----------------------------------------------------------|--------------------------|------------|
| CH-1 | Structural vibration                    | Demolition, piling, compaction, heavy equipment operation | ODCB Buildings           | Medium     |
| CH-2 | Ground movement                         | Excavation and earthworks                                 | ODCB Buildings           | Medium     |
| CH-3 | Accidental physical damage              | Construction vehicles and equipment                       | ODCB Buildings           | Medium     |
| CH-4 | Dust deposition                         | Demolition and construction activities                    | ODCB Buildings           | Low        |
| CH-5 | Visual disturbance                      | Temporary construction facilities                         | Heritage setting         | Low        |
| CH-6 | Discovery of unknown heritage materials | Excavation activities                                     | Archaeological resources | Low        |

## E. Management and Mitigation Measures

### 1. Mitigation Hierarchy

The Project shall apply the following hierarchy:



Given the irreplaceable nature of cultural heritage resources, avoidance and minimization measures shall be prioritized.

### 2. Pre-Construction Phase Measures

Prior to commencement of construction activities:

- Conduct photographic documentation of all identified heritage assets;
- Undertake baseline condition surveys of ODCB buildings;

- Record existing cracks, structural defects, and façade conditions;
- Establish heritage protection zones around identified ODCB buildings;
- Communicate heritage protection requirements to contractors and workers.

### 3. Construction Phase Measures

The Contractor shall:

- Prevent storage of materials and equipment within designated protection zones;
- Restrict heavy vehicle movements near heritage buildings where practicable;
- Implement dust suppression measures;
- Maintain access to heritage buildings throughout construction;
- Conduct routine inspections of heritage structures;
- Immediately report any observed damage.

No demolition, façade alteration, or modification of heritage-defining architectural features shall be undertaken on identified ODCB buildings.

#### Construction Control Measures

Where construction activities are undertaken in proximity to identified ODCB buildings, the Contractor shall implement the following heritage protection measures to prevent physical damage and minimize indirect impacts on cultural heritage assets.

| Potential Impact              | Management Measure                                                                                                                                                                                                                                   | Responsible Party                |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|
| <b>Construction vibration</b> | Select construction methods that generate the lowest practicable vibration levels (e.g., bored piling, hydraulic press-in piling, or other low-vibration techniques where technically feasible) when working near heritage buildings.                | Contractor                       |
| <b>Structural vibration</b>   | Establish a heritage protection zone around each identified ODCB building. Heavy equipment operation, material stockpiling, and equipment parking shall be prohibited within the designated protection zone unless specifically approved by the PMU. | Contractor                       |
| <b>Structural damage</b>      | Conduct pre-construction structural condition surveys, including crack mapping and photographic documentation.                                                                                                                                       | Contractor / Structural Engineer |
| <b>Dust deposition</b>        | Apply regular dust suppression measures, including water spraying and housekeeping, particularly during demolition and excavation activities.                                                                                                        | Contractor                       |
| <b>Accidental impact</b>      | Install temporary fencing, warning signage, and physical barriers around heritage buildings during construction.                                                                                                                                     | Contractor                       |
| <b>Excessive vibration</b>    | Immediately suspend vibration-generating activities if monitoring indicates vibration levels exceeding the established threshold until corrective actions have been implemented.                                                                     | Contractor                       |

#### 4. Vibrations Management and Monitoring

Construction activities generating vibration shall be carefully managed to avoid potential impacts on identified heritage buildings.

- The following measures shall be implemented:
- A pre-construction structural condition survey shall be completed by qualified professionals;
- Site-specific vibration monitoring requirements shall be established prior to demolition, piling, or other vibration-generating activities;
- Appropriate Peak Particle Velocity (PPV) thresholds shall be determined by a qualified structural engineer and/or cultural heritage specialist;
- Vibration monitoring shall be conducted where construction activities may affect identified ODCB buildings;
- Exceedance of established threshold values shall trigger investigation and corrective actions;
- Construction methods shall be reviewed and adjusted if vibration levels exceed acceptable limits.

##### Vibration Monitoring Framework

| Activity          | Potential Impact        | Monitoring Requirement    |
|-------------------|-------------------------|---------------------------|
| <b>Demolition</b> | Structural cracking     | PPV monitoring            |
| <b>Piling</b>     | Structural vibration    | PPV monitoring            |
| <b>Compaction</b> | Ground vibration        | Inspection and monitoring |
| <b>Excavation</b> | Settlement and movement | Structural inspection     |

##### Operational Vibration Control

Prior to commencement of demolition, piling, compaction, or other vibration-generating activities, a qualified structural engineer and/or cultural heritage specialist shall establish site-specific Peak Particle Velocity (PPV) threshold values for each identified ODCB building based on its structural condition, distance from construction activities, and applicable international guidance (e.g., DIN 4150-3 or BS 7385).

Continuous vibration monitoring shall be undertaken whenever vibration-generating activities are conducted in proximity to heritage assets.

If monitored vibration levels exceed the established threshold values, the Contractor shall immediately suspend the relevant activities, investigate the cause of exceedance, implement corrective measures, and resume work only after compliance has been restored.

## **14.5 ANNEX E – Record of Public Consultation Meeting**

This section documents the public consultation meeting conducted related to the ESIA study. It provides a summary of the consultation activities, including objectives, participants, methodologies, and key outcomes, as described in the following subsections.

### **E.1. Objectives**

The public consultation objective is to facilitate meaningful stakeholder participation in the ESIA process by providing timely project information, obtaining feedback on potential environmental and social impacts, identifying community concerns and expectations, improving mitigation measures and project design, and ensuring that stakeholder views are considered in decision-making and ongoing project implementation.

In accordance with AIIB policy on meaningful public participation, the bank anchors its consultation requirements in Environmental and Social Standard 1 (ESS 1), which serves as the core principle for stakeholder engagement. Under this framework, clients are mandated to implement an early, transparent, and inclusive consultation process through a structured Stakeholder Engagement Plan that spans the entire project lifecycle. Proportional to the project's environmental and social risk level, this ESS 1-driven process ensures that critical project information is disclosed to affected communities well in advance, establishing a continuous and accountable feedback loop.

### **E.2. Time, Location, and Participants**

The public consultation for ESIA was held on Thursday, 11<sup>th</sup> of June 2026 from 09.30 – 12.00 West Indonesia Time (GMT +7), located at Pangrango Hall, RSMM, and attended by 25 participants, representing the local community (project affected people), Babinsa (village supervisory officer from the Indonesian Army), the Babinkamtibmas (community policing officer from the Indonesian National Police), and Bogor City Environmental Agency official. Based on gender, 20 participants are male-gendered and 5 are female-gendered.

The presentation materials were delivered by RSMM representatives, accompanied by the ESIA consultants.

### **E.3. Consultation Outcomes**

The consultation begins with opening remarks from RSMM representatives, who expressed appreciation for the attendance of all participants, explaining the importance of public consultation as part of the ESIA, and hope for community input, suggestions, and feedback openly and constructively so that these could be used to refine the environmental documents and activity planning. Next is opening remarks from related stakeholders (Bogor City

Environmental Agency representative, West Bogor Subdistrict Official, and Menteng Ward Official)

#### Information Disclosure during Public Consultation Meeting

Following the opening, the RSMM and ESIA consultants presented the public consultation materials. The information disclosed in the presentation were:

- Description regarding RSMM development project plan, which consisting of these activities:
  - Renovation and construction of service buildings;
  - Increase in inpatient capacity;
  - Hospital layout planning;
  - Modernization of health care facilities and infrastructure
- Explanation of hospital capacity increase from 590 beds to 804 beds and building size increase from  $\pm 50.566 \text{ m}^2$  to  $\pm 177.418 \text{ m}^2$ .
- Explanation on activities conducted during hospital development activity, from pre-construction, construction, and operation phase.
- Explanation of highlight of environmental impacts caused by project activities, such as:
  - a) Deterioration of ambient air quality from construction dust;
  - b) Noise increase;
  - c) Traffic disturbance;
  - d) Run-off water increase;
  - e) Deterioration of surface water quality; and
  - f) Increase in waste, both domestic and construction.
- ESIA consultant explains that all impacts and risks will be further identified and studied in AMDAL and ESIA study, including the mitigation and monitoring efforts.
- It is also explained that run-off water will be managed through internal drainage system, sedimentation pond, and infiltration well.

#### Discussion with Stakeholders

After RSMM and ESIA consultant delivered the public consultation materials, consultation participants are given chance to give feedbacks (opinion, concerns, and suggestion) regarding the project. Feedbacks are given verbally and written (through Opinion, Concerns, and Suggestion Forms. Annex E.4-2). The resume of feedbacks delivered by public consultation participants are described below.

| No. | Name          | Location                                    | Key Issues Raised                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | RSMM and ESIA Consultant Response                                                                                                                                                                                                                                                                                                                                                        |
|-----|---------------|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.  | Mr. Suprianto | N/A                                         | <ul style="list-style-type: none"> <li>The flooding caused by the construction of the Gene Bank. Solutions to this problem must be explored;</li> <li>Note that the drainage system (public drainage) is no longer able to handle the volume and is damaged;</li> <li>It is hoped that workers will be able to find employment on the project, thereby reducing unemployment.</li> </ul>                                                                                               | <ul style="list-style-type: none"> <li>Drainage and run-off water will be one of the main issues studied in AMDAL and ESIA;</li> <li>Local workforce participation will be considered, while still following project requirement and qualification of the local workforce.</li> </ul>                                                                                                    |
| 2.  | Mr. Sufian    | Menteng Ward                                | <ul style="list-style-type: none"> <li>Regarding traffic, will new entry and exit points be prepared, or using existing ones? If possible, make entry and exit points wider, and include a bay for public minibuses;</li> <li>Allocate spots for small business to increase business opportunities;</li> <li>Do not divert drainage into residential areas;</li> <li>If the ground level is raised (through backfilling), ensure that it does not impact residential areas.</li> </ul> | <ul style="list-style-type: none"> <li>RSMM responded that entry and exit for construction vehicles will be considered during project implementation;</li> <li>Small businesses (UMKM) will be considered for development plan of RSMM, and will be considered for social management in the future;</li> <li>Increase in dust from backfilling will be considered in the ESIA</li> </ul> |
| 3.  | Mr. Ismanto   | Neighborhood Association Head (Ketua RW 18) | <ul style="list-style-type: none"> <li>Directly affected; there already impacts from the Gene Bank construction;</li> <li>Impact on RW 18, RW 17, and RW 16: public drainage—please check the drainage system, as it is no longer adequate;</li> <li>Because the water isn't flowing, there's a</li> </ul>                                                                                                                                                                             | <ul style="list-style-type: none"> <li>Drainage and run-off water will be one of the main issues studied in AMDAL and ESIA;</li> <li>RSMM commits to maintain communication and coordination with the community during project implementation, including coordination</li> </ul>                                                                                                         |

| No. | Name       | Location                                | Key Issues Raised                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | RSMM and ESIA Consultant Response                                                                                                                                                                                                                                                                              |
|-----|------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |            |                                         | <p>high mosquito population;</p> <ul style="list-style-type: none"> <li>• Sediment levels are also high; this is because the water inlet to the river has been blocked, causing water to pool, and if there's an overflow;</li> <li>• Air: Please provide information on air quality during the dry season, as construction will inevitably impact residential areas;</li> <li>• The trees in the community area need to be maintained (by the local government), as do the power lines. These trees are at risk of being struck by lightning (in Bogor), where lightning strikes are frequent.</li> </ul> | <p>on air condition in the project area;</p> <ul style="list-style-type: none"> <li>• Local workforce participation will be considered, while still following project requirement and qualification of the local workforce.</li> </ul>                                                                         |
| 4.  | Mr. Juna   | Youth Organization (Karang Taruna)      | <ul style="list-style-type: none"> <li>• Please conduct outreach activities prior to construction.</li> <li>• Employment opportunities has not been taken into account. Please inform regarding this.</li> <li>• Ensure communication with the local community, so that third parties hire local residents with Menteng ID cards.</li> </ul>                                                                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li>• RSMM commits to maintain communication and coordination with the community during project implementation;</li> <li>• Local workforce participation will be considered, while still following project requirement and qualification of the local workforce.</li> </ul> |
| 5.  | Mr. Sitepu | Neighborhood Association Member (RW 17) | *Sent written comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | -                                                                                                                                                                                                                                                                                                              |
| 6.  | Mrs. Weni  | Neighborhood Association Member (RW 01) | <ul style="list-style-type: none"> <li>• Before the activity begins, traffic management plans should be prepared in advance. Make sure</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>• Traffic management plan will be one of the planned mitigations for development activities, by conducting traffic</li> </ul>                                                                                                                                           |

| No. | Name        | Location                                | Key Issues Raised                                                                                                                                                                                                                                                                                               | RSMM and ESIA Consultant Response                                                                                                                                                                                                                                                                                                                                                                |
|-----|-------------|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |             |                                         | <p>not to disrupt public traffic.</p> <ul style="list-style-type: none"> <li>During the construction of the gene bank, there is a lot of dust, so special attention should be paid to dust control during construction.</li> </ul>                                                                              | <p>impact assessment (ANDALALIN);</p> <ul style="list-style-type: none"> <li>Dust will be managed by spraying the road with water regularly, covering dust-releasing potential material, work hour limitation when possible, and maintenance of heavy tools and project vehicle.</li> </ul>                                                                                                      |
| 7.  | Mr. Krisna  | Neighborhood Association Member (RW 01) | <ul style="list-style-type: none"> <li>Need a PiC for grievance submission and handling during project activities;</li> <li>There is a PDAM water pipe along that road, so please be mindful of it during mobilization.</li> </ul>                                                                              | <ul style="list-style-type: none"> <li>PiC for grievance submission will be provided as part of Grievance Redress Mechanism;</li> <li>RSMM will coordinate with contractor to make sure that PDAM water pipe is not damaged during mobilization.</li> </ul>                                                                                                                                      |
| 8.  | N/A         |                                         | <ul style="list-style-type: none"> <li>Management of project vehicles movements;</li> <li>Negative experiences associated with Gene Bank should not be repeated during the hospital's construction;</li> <li>Dust and noise should be minimized so as not to disturb residents, especially children.</li> </ul> | <ul style="list-style-type: none"> <li>Project vehicles movement will be managed through ANDALALIN;</li> <li>RSMM will learn from the mistake on Gene Bank Construction;</li> <li>Dust will be managed by spraying the road with water regularly, covering dust-releasing potential material, work hour limitation when possible, and maintenance of heavy tools and project vehicle.</li> </ul> |
| 9.  | Mr. Mulyadi | Menteng Ward                            | <ul style="list-style-type: none"> <li>Please ensure that construction activities are not carried out before AMDAL is issued;</li> <li>Inform the community about the site plan through public outreach;</li> </ul>                                                                                             | <ul style="list-style-type: none"> <li>RSMM and consultant and currently preparing AMDAL as pre-requisite of project activity;</li> <li>RSMM commits to maintain communication and coordination with the community during</li> </ul>                                                                                                                                                             |

| No. | Name          | Location                                | Key Issues Raised                                                                             | RSMM and ESIA Consultant Response                                                                                                                                                               |
|-----|---------------|-----------------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |               |                                         | <ul style="list-style-type: none"> <li>Construct a diversion channel in the river.</li> </ul> | project implementation;s                                                                                                                                                                        |
| 10. | Mr. Supriyadi | Neighborhood Association Member (RW 18) | Asking about CSR program                                                                      | <ul style="list-style-type: none"> <li>RSMM will try to provide CSR as to the utmost extent possible, taking into consideration the services in RSMM and the needs of the community.</li> </ul> |

#### E.4. Documentation

##### 1. Attendance List

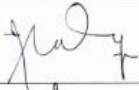
**DAFTAR HADIR PESERTA KONSULTASI PUBLIK  
STUDI AMDAL - ESIA  
RENCANA PENGEMBANGAN RS Dr. H. MARZOEKI MAHDI**

Tempat : Aula Pangrango, Gedung Poli Spesialis Lantai 3, RS Dr. H. Marzoeqi Mahdi  
Hari/ Tanggal : Kamis / 11 Juni 2026

| No | Nama            | Instansi/Jabatan      | Alamat                 | Tanda Tangan                                                                          | Nomor Telepon   |
|----|-----------------|-----------------------|------------------------|---------------------------------------------------------------------------------------|-----------------|
| 1  | Krisna Larmiana | Ketua RT3 RW 1        | RT3 RW 1<br>No. 19A    |  | 087-737-700-007 |
| 2  | Wenny M. Schra  | Ketua RT02 RW 1       | Komp. RSMM<br>RW 01    |  | 087770333970    |
| 3  | TRESNAGRYA      | Ket. RT 02/18         | BMA BG LG              |  | 081585977516    |
| 4  | Supigawro       | DA-RW. 3/11           | Rt 3/11                |  |                 |
| 5  | Suhanda         | RW 20<br>kal: manteng | Kombalutro<br>RT 01/20 |  |                 |
| 6. | WAHID           | Ket RT 9/20.          | Komp Bahutero          |  | 081387644060    |

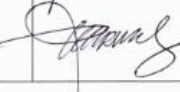
**DAFTAR HADIR PESERTA KONSULTASI PUBLIK  
STUDI AMDAL - ESIA  
RENCANA PENGEMBANGAN RS Dr. H. MARZOEKI MAHDI**

Tempat : Aula Pangrango, Gedung Poli Spesialis Lantai 3, RS Dr. H. Marzoeqi Mahdi  
Hari/ Tanggal : Kamis / 11 Juni 2026

| No | Nama         | Instansi/Jabatan | Alamat               | Tanda Tangan                                                                        | Nomor Telepon      |
|----|--------------|------------------|----------------------|-------------------------------------------------------------------------------------|--------------------|
| 7  | Ferdinal     | RW 16.           | Rua BW 10<br>RT 2/16 |  | 0895 3200 70237    |
| 8  | BOUWAWO      | Binnas           | KORSEK BOKOR<br>BART |  | 0838 17<br>777 91  |
| 9  | Rowi         | BukinSa          | Korank Bogor<br>BART |  | 085 882 616<br>320 |
| 10 | JINA         | KE- BOGOR BART   | Jl. H. HAJI<br>FALAK |  | 081814083570       |
| 11 | Ade Iman M   | Kec. Bogor Barat | Jl. KH. Falak        |  | 082112361710       |
| 12 | Rachnawati R | Kel. Menteng     | Medika 1             |  | 08158034742        |

**DAFTAR HADIR PESERTA KONSULTASI PUBLIK  
STUDI AMDAL - ESIA  
RENCANA PENGEMBANGAN RS Dr. H. MARZOEKI MAHDI**

Tempat : Aula Pangrango, Gedung Poli Spesialis Lantai 3, RS Dr. H. Marzoeqi Mahdi  
Hari/ Tanggal : Kamis / 11 Juni 2026

| No | Nama          | Instansi/Jabatan | Alamat                          | Tanda Tangan                                                                          | Nomor Telepon |
|----|---------------|------------------|---------------------------------|---------------------------------------------------------------------------------------|---------------|
| 13 | Juna-maulana  | Karang Taruna    | Jl. KH. TB M. Falak<br>NO. 319. |  | 085777741688  |
| 14 | Mulyadi       | LPM Menteng      | Jl. Medika 1                    |  | 087873808478  |
| 15 | Tapan L       | Kel. Menteng     | Jl. Medika 1                    |  | 0895355306182 |
| 16 | H. NIKO F     | Korwa RW 17      | Jl. Terapi 1                    |   | 081241237000  |
| 17 | YUSUF J       | Korwa RT 01/16   | Korwa 10                        |  | 087870302341  |
| 18 | Ik Supriadi-F | Korwa RW-16      | Terapi 1C<br>RT 01-RW-16        |   | 083890557081  |

**DAFTAR HADIR PESERTA KONSULTASI PUBLIK  
STUDI AMDAL - ESIA  
RENCANA PENGEMBANGAN RS Dr. H. MARZOEKI MAHDI**

Tempat : Aula Pangrango, Gedung Poli Spesialis Lantai 3, RS Dr. H. Marzoeqi Mahdi  
Hari/ Tanggal : Kamis / 11 Juni 2026

| No | Nama            | Instansi/Jabatan      | Alamat            | Tanda Tangan                                                                        | Nomor Telepon |
|----|-----------------|-----------------------|-------------------|-------------------------------------------------------------------------------------|---------------|
| 13 | Ismi-wanto      | Ka RW 18              | BMA Blok BH 2g    |   | 08128640927   |
| 20 | Shamet Prinda   | Sia Transiblen        | Kelurahan Menteng |  | 089561709567  |
| 21 | Anu Linda       | Ref. RT03/17          | BMA RW 1          |  | 08571640608   |
| 22 | Isayu Melambang | Kabid Tata Lingkungan | 21. Pangdang      |  |               |
| 23 | Auna            | Sia. PM               | --                |  |               |
| 24 | Yunia           | Selehar               | Menteng           |  | 08128356428   |

**DAFTAR HADIR PESERTA KONSULTASI PUBLIK  
STUDI AMDAL - ESIA  
RENCANA PENGEMBANGAN RS Dr. H. MARZOEKI MAHDI**

Tempat : Aula Pangrango, Gedung Poli Spesialis Lantai 3, RS Dr. H. Marzoeqi Mahdi  
Hari/ Tanggal : Kamis / 11 Juni 2026

| No | Nama   | Instansi/Jabatan | Alamat | Tanda Tangan                                                                          | Nomor Telepon |
|----|--------|------------------|--------|---------------------------------------------------------------------------------------|---------------|
| 25 | Syamsi | B. RW 17         | BMA    |  |               |
|    |        |                  |        |                                                                                       |               |
|    |        |                  |        |                                                                                       |               |
|    |        |                  |        |                                                                                       |               |
|    |        |                  |        |                                                                                       |               |
|    |        |                  |        |                                                                                       |               |

## 2. Opinion, Concerns, and Suggestion Forms

**SARAN DAN TANGGAPAN**  
KONSULTASI PUBLIK  
RENCANA PENGEMBANGAN RUMAH SAKIT DR. H. MARZOEKI MAHDI

**SARAN DAN TANGGAPAN:**

Komitmen teknis terkait dampak negatif dari  
tersebut, seperti terkait rencana pembangunan  
RS Marzoeqi Mahdi, khususnya terkait  
pemaksimalan sosial di lingkungan sekitar  
untuk lokal dan tenaga kerja lokal.

Nama : Juna Maulana  
Kapang Toema  
Tanda tangan :

**SARAN DAN TANGGAPAN**  
KONSULTASI PUBLIK  
RENCANA PENGEMBANGAN RUMAH SAKIT DR. H. MARZOEKI MAHDI

**SARAN DAN TANGGAPAN:**

1. Unit Perawatan kesehatan maka untuk perawatan  
pembangunan dan operasionalnya agar diperhatikan
2. Dalam proses pembangunan atau pembangunan Pura  
berkuran, agar apa saja yang mungkin tidak dapat  
diperhatikan karena pembangunan yang tidak terencana  
Ruang agar jangan diberikan untuk kegiatan  
kegiatan dan kegiatan lainnya
3. Melibatkan Warga setempat / keluarga Xapangan  
pembangunan maka memperhatikan faktor lokal /  
pembangunan atau pengembangan
4. / pembangunan agar ke dalam agar ke dalam  
agar di perhatikan dengan tetap RS Marzoeqi  
ke pada warga setempat atau tenaga kerja
5. Kanta agar notasi dan atau kegiatan tanpa  
mendapatkan hasil yang positif
6. Tidak mengabaikan atau faktor dalam proses /  
kantor maka diberikan

Nama : DINA SINTI  
KEN. SOGOR BARAT  
Tanda tangan :

**SARAN DAN TANGGAPAN**  
KONSULTASI PUBLIK  
RENCANA PENGEMBANGAN RUMAH SAKIT DR. H. MARZOEKI MAHDI

**SARAN DAN TANGGAPAN:**

- Mohon kiranya sebelum dilakukan kegiatan pembangunan  
agar mengingat 120 hektar lahan di Terasan  
dan akan sangat pembangunan akan dilakukan  
untuk masih tahap proses
- Menyampaikan/mengsialasikan Site Plan  
kepada Penguasa Wilayah
- Setelah pembangunan limbah, tidak menggunakan  
drainase yg sudah ada, karena akan ada  
dalam pembangunan tidak akan membuang  
volume dan debit air hujan

Nama : Mulyadi  
Tanda tangan :

**SARAN DAN TANGGAPAN**  
KONSULTASI PUBLIK  
RENCANA PENGEMBANGAN RUMAH SAKIT DR. H. MARZOEKI MAHDI

**SARAN DAN TANGGAPAN:**

- Untuk Pengolahan limbah berat Rumah Sakit  
sementara dapat di lakukan dengan baik  
dan profesional
- Untuk limbah pembuangan air dari  
Rumah Sakit Semoga sudah di rencanakan  
dengan baik ~~sementara~~ dan  
dapat di salurkan ke sungai ~~sementara~~ BESAR  
Setelah pengalihan yg baik dan sempurna
- Sement tidak ada limbah dari Rumah  
Sakit ~~sementara~~ Mesuk melalui perumahan  
atau pemukiman warga
- Dampak dari pembangunan dan peletakan  
Rumah sakit tentunya akan mengurangi  
area pascapan air untuk air kami  
menyeras kan untuk melihat lingkungan  
yg akan berdampak terlewat dihalu  
karena air akan mengalir ke tempat  
atau wilayah yg rendah seperti  
lingkungan Rumi di belukar ~~mentara~~  
karena banyak juga warga dari  
Rumi yg menutup saluran air  
sehingga jalur air tersekat jalannya
- Tidak UMUM ~~sementara~~ warga yg  
berdampak, bukan pedagang Kaki lima  
yg kebanyakan pendatang dari wilayah lain.

Nama : FERDINAL

Tanda tangan :

- Mohon untuk pengaduan jawab  
proyek harus benar benar  
bertanggung jawab atas setiap  
keluhan masyarakat.

| SARAN DAN TANGGAPAN                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| KONSULTASI PUBLIK                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                    |
| RENCANA PENGEMBANGAN RUMAH SAKIT Dr. H. MARZOEKI MAHDI                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                    |
| <p><b>SARAN DAN TANGGAPAN :</b></p> <p>Perbaikan lingkungan<br/>Pembinaan kesehatan lingkungan air dan air limbah ke masyarakat<br/>Pengaliran ke saluran limbah. Bangun drainase di dalam rumah<br/>sebelum kepublikas.</p> <p>Bangun sesuai ergonomi<br/>Rumah sederhana, bangun yg benar, tenaga transparansi untuk<br/>Pembinaan, pendidikan tenaga kerja di lapangan agar bisa<br/>menjadi untuk pengaliran tenaga kerja yg</p> |                                                                                                    |
| <p><b>SARAN DAN TANGGAPAN :</b></p> <p>Drainase lebih di perhatikan. Karna untuk jangka<br/>panjang<br/>Pangan semua di aspal. Harus ada penyerapan air</p> <p>UMKM diutamakan dari lingkungan setempat<br/>Dan Tenaga kerja untuk kebersihan (Cleaning<br/>Service) diutamakan dari wilayah yg terdampak<br/>UMKM dan Cleaning service diutamakan dari B.W<br/>terdekat.</p>                                                        |                                                                                                    |
| Nama :                                                                                                                                                                                                                                                                                                                                                                                                                               | Nama : Sulhonda                                                                                    |
| Tanda tangan :                                                                                                                                                                                                                                                                                                                                                                                                                       | Tanda tangan :  |

### 3. Photo Documentation of Public Consultation Meeting





## 14.6 ANNEX F - Hospital Relocation and Transition Management Plan

### 1. Introduction

The RSMM Redevelopment Project will be implemented while the hospital remains fully operational and continues providing specialized mental health and general healthcare services. The Project requires demolition of selected buildings, phased construction, and relocation of several hospital services without interrupting essential healthcare delivery.

Accordingly, RSMM has prepared this Hospital Relocation and Transition Management Plan (HRTMP) to ensure that patient safety, continuity of medical services, staff safety, emergency response capability, and hospital operations are maintained throughout the construction period.

This HRTMP complements the hospital's existing operational Standard Operating Procedures (SOPs), particularly those governing patient transfer, infection prevention and control, emergency preparedness, psychiatric care, occupational health and safety, and hospital operational management. Rather than replacing existing SOPs, this Plan establishes the project-specific coordination, scheduling, communication, and risk management arrangements required during phased redevelopment.

The HRTMP forms an integral part of the Project Environmental and Social Management Plan (ESMP) and will be implemented by RSMM Management, the Project Management Unit (PMU), the Contractor, and the Construction Supervision Consultant.

### 2. Objective

The objectives of this Plan are to:

- ❖ maintain uninterrupted hospital operations during construction;
- ❖ ensure continuity of critical medical and psychiatric services;
- ❖ minimize disruption to patients, visitors, and healthcare workers;
- ❖ ensure safe relocation of departments, equipment, records, and utilities;
- ❖ maintain emergency response capability throughout construction;
- ❖ prevent conflicts between construction activities and hospital operations;
- ❖ protect vulnerable psychiatric patients during relocation activities;
- ❖ establish clear institutional responsibilities and communication arrangements throughout each relocation stage.

### 3. Existing Hospital Procedure

RSMM has established several Standard Operating Procedures (SOPs) relevant to patient movement and hospital operations, including:

- ❖ SOP for Patient Transfer from Psychiatric Intensive Care Unit (UPIP) to Inpatient Ward;

- ❖ SOP for Institutional Recipient Program (IPWL);
- ❖ SOP for Infection Prevention and Control;
- ❖ SOP for Emergency Response;
- ❖ SOP for Hazardous Waste Management;
- ❖ SOP for Medical Equipment Management;
- ❖ SOP for Occupational Health and Safety;
- ❖ SOP for Hospital Operational Management.

These SOPs will remain fully applicable throughout project implementation. The present HRTMP supplements these operational procedures by providing additional project-specific arrangements for phased relocation, construction coordination, communication, temporary access management, and continuity of services.

The implementation of this HRTMP shall be supported by RSMM's existing operational Standard Operating Procedures (SOPs), including but not limited to patient transfer procedures, psychiatric inpatient management, infection prevention and control, emergency preparedness, occupational health and safety, and hospital operational management.

These SOPs have been developed as part of the Hospital's operational management system in accordance with applicable Indonesian laws, regulations, and Ministry of Health requirements governing hospital services.

Prior to implementation of each relocation phase, RSMM will review the applicability of relevant SOPs to ensure that operational procedures remain appropriate for construction-phase conditions and continue to support safe, accessible, and inclusive healthcare services for all patients, including persons with mental disabilities and other vulnerable groups. Where necessary, SOPs will be updated in consultation with qualified clinical personnel and relevant specialists to ensure consistency with applicable national requirements and internationally recognized good practice on disability inclusion and patient-centered care.

#### **4. Principle of Hospital Relocation**

Hospital relocation activities shall be guided by the following principles:

- ❖ Patient safety is the highest priority.
- ❖ No interruption of emergency services.
- ❖ Continuity of psychiatric care.
- ❖ Continuity of outpatient services.
- ❖ Zero uncontrolled patient transfer.
- ❖ Clear separation between construction and healthcare activities.
- ❖ Advance communication with all stakeholders.
- ❖ Phased implementation.

- ❖ Continuous monitoring and adaptive management.

## 5. Phased Relocation Strategy

Hospital relocation will be undertaken in accordance with the approved redevelopment schedule. Relocation activities will only commence after replacement facilities are ready for operation, all required utilities are functional, safety inspections have been completed, and hospital management authorizes the relocation.

Construction activities within each area will only begin after the corresponding hospital functions have been safely relocated. The phased approach minimizes disruption to healthcare services while maintaining operational continuity throughout the redevelopment period.

## 6. Planned Relocation Stages

The hospital has prepared a detailed relocation schedule consisting of two principal implementation stages.

### Phase 1 Relocation

**Tabel 14.1 Phase 1 Relocation Plan**

| No | Planned Development                 | Buildings Assets Affected                      | Relocation Plan                            | Time      |
|----|-------------------------------------|------------------------------------------------|--------------------------------------------|-----------|
| 1  | Teaching Hospital                   | Policlinic Pita Aruna                          | Gedung eks Komdik                          | Juli 2027 |
|    |                                     | Geriatric Terpadu (Gedung Ismaya)              | Gedung poliklinik spesialis lantai 1       | Juli 2027 |
| 2  | Manajemen                           | ICU                                            | Gedung Hemodialisa                         | Juli 2027 |
|    |                                     | Ruang Perawatan Antasena                       | Ruang Perawatan Gedung Basudewa            | Juli 2027 |
|    |                                     | Ruang Perawatan Non Psikiatri (Bisma)          | Ruang Perawatan Gedung Basudewa            | Juli 2027 |
| 3  | Auditorium                          | Ruang Perawatan Anak Remaja Psikiatri (Shinta) | Ruang Perawatan Antareja                   | Juli 2027 |
|    |                                     | Ruang Perawatan Psikiatri Dewasa (Sadewa)      | Gedung 1 Rehabilitasi Napza                | Juli 2027 |
|    |                                     | Gedung Rehabilitasi Psikososial                | Gedung Psikiatri Terpadu Lantai 3          | Juli 2027 |
|    |                                     | Ruang MPP                                      | Gedung Galeri Kresna                       | Juli 2027 |
|    |                                     | Hospice Psikososial (Gedung Anggada)           | Rumah Dinas                                | Juli 2027 |
| 4  | Gedung Rawat Inap Psikiatri A dan B | Ruang Perawatan Psikiatri (Subadra)            | (Non Operasional)                          | -         |
|    |                                     | Ruang Perawatan Psikiatri (Arimbi)             | Bergabung dengan Ruang Perawatan Bratasena | Juli 2027 |
|    |                                     | Ruang Perawatan Psikiatri (Gatokaca)           | Bergabung dengan Ruang Perawatan Bratasena | Juli 2027 |

|   |                           |                |             |           |
|---|---------------------------|----------------|-------------|-----------|
| 5 | Area Utilitas             | Gedung Laundry | Gudang Umum | Juli 2027 |
| 6 | Asrama Diklat             | -              | -           | -         |
| 7 | Gedung Rehabilitasi Napza | -              | -           | Juli 2027 |

Source: RS dr. H. Marzoeki Mahdi, 2026

The first phase involves relocation of hospital services necessary to enable demolition and construction of the initial redevelopment area. Activities include relocation of affected clinical services, administrative functions, supporting facilities, medical equipment, and associated utilities to designated temporary or permanent replacement facilities.

Prior to relocation, each receiving facility shall be inspected to ensure operational readiness, including utilities, medical gases, ICT systems, fire protection systems, infection prevention measures, and accessibility for patients, including persons with disabilities.

### **Phase 2 Relocation**

**Tabel 14.2 Phase 2 Relocation Plan**

| No | Planned Development                          | Buildings Assets Affected           | Relocation Plan                 | Time         |
|----|----------------------------------------------|-------------------------------------|---------------------------------|--------------|
| 1  | Gedung Layanan Umum                          | Policlinic Specialist Non Psikiatri | Teaching Hospital               | Agustus 2029 |
| 2  | Gedung IGD Psikiatri & Poli Psikiatri        | Assessment Center                   | Teaching Hospital               | Agustus 2029 |
|    |                                              | Radiodiagnostik                     | Teaching Hospital               | Agustus 2029 |
|    |                                              | SIRS                                | Gedung Manajemen                | Agustus 2029 |
|    |                                              | Fisioterapi                         | Teaching Hospital               | Agustus 2029 |
|    |                                              | Laboratorium                        | Teaching Hospital               | Agustus 2029 |
| 3  | Gedung Rawat Inap Psikiatri Eksekutif        | Ruang Srikandi                      | Gedung Psikiatri Bagian A       | Agustus 2029 |
| 4  | Gedung Rawat Inap Psikiatri JKN Bagian C & D | Poli Psikiatri Terpadu              | Gedung Teaching Hospital        | Agustus 2029 |
|    |                                              | Ruang Perawatan Psikiatri Saraswati | Gedung Psikiatri Bagian A dan B | Agustus 2029 |
|    |                                              | Ruang Perawatan Psikiatri Utari     | Gedung Psikiatri Bagian A dan B | Agustus 2029 |
|    |                                              | Ruang Perawatan Psikiatri Dewi Amba | Gedung Psikiatri Bagian A       | Agustus 2029 |
|    |                                              | Ruang Perawatan Psikiatri Dewi Sri  | Gedung Teaching Hospital        | Agustus 2029 |
| 5  | Gedung PKJN / CMH                            | Ruang Perawatan Psikiatri Bratasena | Gedung Teaching Hospital        | Agustus 2029 |

|   |                          |                                   |                                 |              |
|---|--------------------------|-----------------------------------|---------------------------------|--------------|
| 6 | Gedung Sport Psikiatri   | Ruang Perawatan Psikiatri Drupadi | Gedung Psikiatri Bagian A dan B | Agustus 2029 |
| 7 | Gedung UPIP Laki-Laki    | Galeri Kresna                     | Gedung Manajemen                | Agustus 2029 |
| 8 | Gedung UPIP Wanita       | Galeri Kresna                     | Gedung Manajemen                | Agustus 2029 |
|   |                          | Gudang Farmasi                    | Gedung Teaching Hospital        | Agustus 2029 |
|   |                          | Gudang Umum                       | Gedung Manajemen                | Agustus 2029 |
| 9 | Gedung Transit Psikiatri | Instalasi Gizi                    | Gedung Teaching Hospital        | Agustus 2029 |
|   |                          | Gudang Farmasi                    | Gedung Teaching Hospital        | Agustus 2029 |
|   |                          | Area Komersil / Kantin            | Gedung Teaching Hospital        | Agustus 2029 |

Source: RS dr. H. Marzoeki Mahdi, 2026

The second phase will be implemented after completion of the first construction stage and follows the same principles of operational continuity, patient safety, and phased commissioning.

Hospital management will verify operational readiness before each relocation activity is undertaken.

## 7. Patient Transfer Procedures

Patient transfer activities shall follow existing RSMM Patient Transfer SOPs.

Additional project-specific requirements include:

- ❖ relocation schedules coordinated with each clinical department;
- ❖ medical records transferred simultaneously with patients;
- ❖ continuity of medication and treatment;
- ❖ escort by qualified healthcare personnel;
- ❖ continuous supervision of psychiatric patients;
- ❖ advance notification to patients and families;
- ❖ availability of emergency transport;
- ❖ verification of receiving ward readiness before transfer.

Patients requiring intensive psychiatric care, isolation, emergency treatment, or other specialized services shall receive priority attention during relocation.

## 8. Protection of Vulnerable Psychiatric Patients

Because RSMM provides specialized mental health services, particular attention shall be given to protecting psychiatric patients throughout relocation activities.

Measures include:

- ❖ minimizing unnecessary patient movement;

- ❖ avoiding relocation during periods of patient instability whenever practicable;
- ❖ maintaining appropriate staff-to-patient ratios;
- ❖ continuous supervision during transfers;
- ❖ maintaining therapeutic environments;
- ❖ restricting interaction between patients and construction workers;
- ❖ implementing secure access control;
- ❖ providing clear directional signage;
- ❖ ensuring continuity of psychosocial rehabilitation programmes.

## 9. Construction Coordination

Daily coordination meetings shall be conducted between:

- ❖ Hospital Management;
- ❖ Project Management Unit (PMU);
- ❖ Contractor;
- ❖ Construction Supervision Consultant.

Coordination shall include:

- ❖ daily construction schedule;
- ❖ planned relocations;
- ❖ emergency access routes;
- ❖ temporary road closures;
- ❖ utility shutdown schedules;
- ❖ infection prevention requirements;
- ❖ patient movement arrangements;
- ❖ complaints received;
- ❖ corrective actions.

## 10. Temporary Access Management

Throughout construction, separate circulation routes shall be maintained for:

- ❖ patients;
- ❖ visitors;
- ❖ ambulances;
- ❖ emergency vehicles;
- ❖ hospital logistics;
- ❖ construction vehicles.

Temporary wayfinding signage shall be installed whenever circulation routes change.

Traffic marshals shall be deployed during major relocation activities.

## 11. Communication Strategy

RSMM will maintain proactive communication with all affected stakeholders before each relocation stage.

Information will be disseminated through:

- ❖ hospital website;
- ❖ social media;
- ❖ public announcements;
- ❖ information boards;
- ❖ SMS/WhatsApp notifications (where applicable);
- ❖ internal staff briefings;
- ❖ patient information desks.

Information shall include:

- ❖ relocation schedule;
- ❖ temporary access arrangements;
- ❖ affected services;
- ❖ emergency contact numbers;
- ❖ grievance channels.

## 12. Emergency Preparedness During Transition

Emergency preparedness arrangements shall remain fully operational throughout construction.

The Contractor shall ensure that construction activities do not obstruct:

- ❖ ambulance access;
- ❖ fire evacuation routes;
- ❖ emergency assembly points;
- ❖ medical gas systems;
- ❖ electrical supply;
- ❖ water supply;
- ❖ emergency communications.

Emergency drills may be conducted whenever major relocation stages occur.

## 13. Roles and Responsibilities

| Institution     | Responsibilities                |
|-----------------|---------------------------------|
| RSMM Management | Overall implementation of HRTMP |
| PMU             | Coordination and monitoring     |

| Institution               | Responsibilities                       |
|---------------------------|----------------------------------------|
| Contractor                | Safe construction interface management |
| Supervising Consultant    | Compliance monitoring                  |
| Department Heads          | Department-level relocation planning   |
| Medical Staff             | Safe patient transfer                  |
| Security Unit             | Access control                         |
| Infection Prevention Team | IPC supervision                        |
| HSE Team                  | Occupational safety                    |

#### 14. Monitoring

Implementation of this Plan will be monitored using the following indicators:

- ❖ continuity of essential healthcare services;
- ❖ number of patient transfer incidents;
- ❖ service interruption duration;
- ❖ emergency response time;
- ❖ patient complaints;
- ❖ staff complaints;
- ❖ construction-related incidents affecting hospital operations;
- ❖ access disruptions;
- ❖ utility interruptions;
- ❖ corrective actions implemented.

Monitoring findings will be incorporated into the Project's Environmental and Social Monitoring Reports.

#### 15. Grievance Management

Complaints associated with relocation activities shall be managed through the integrated Project Grievance Redress Mechanism (GRM), which utilizes RSMM's existing complaint handling system.

Complaints related to patient safety, service continuity, accessibility, or relocation activities will be prioritized and investigated promptly. Corrective actions shall be implemented in coordination with relevant hospital departments and the Project Management Unit (PMU), and significant incidents will be included in periodic environmental and social performance reports submitted to AIIB.

#### 16. Adaptive Management

The HRTMP is intended to be a living document. It will be reviewed and updated prior to each major relocation stage, following changes to the construction schedule, hospital operational requirements, or emergency preparedness arrangements. Lessons learned from previous relocation phases, stakeholder feedback, incident investigations, and monitoring results will be incorporated to continuously improve the effectiveness of relocation and transition management.

## **14.7 ANNEX G – Commercial Tenant Relocation and Livelihood Restoration Plan**

### **1. Background**

The redevelopment of RSMM will be implemented through a phased construction approach to ensure continuity of hospital services throughout the Project implementation period. Based on the current implementation schedule, commercial tenants are not expected to be affected during Phase 1. Temporary impacts to commercial tenants are anticipated to occur during Phase 2, when redevelopment activities reach areas currently occupied by commercial facilities.

At the time of preparation of this ESIA, the final relocation arrangement for individual tenants has not yet been determined by RSMM, as it will depend on the finalized construction sequencing, availability of temporary facilities, and operational requirements of the hospital. Preliminary discussions indicate that temporary relocation to available hospital buildings, including the Teaching Hospital building or other suitable facilities within the hospital complex, may be considered. However, the final relocation locations will be confirmed by RSMM prior to commencement of Phase 2 construction.

Accordingly, this Commercial Tenant Relocation and Livelihood Restoration Plan establishes the principles, procedures, and commitments that will guide tenant relocation and livelihood restoration once the final implementation arrangements are confirmed, the Project will prioritize avoidance and minimization of livelihood disruption and provide appropriate relocation assistance, transitional support, and livelihood restoration measures to eligible affected tenants, consistent with applicable national requirements and AIIB Environmental and Social Standards.

### **2. Existing Tenant Conditions**

Baseline surveys undertaken during the ESIA identified that commercial activities within the RSMM complex consist of cooperative-managed food stalls, Dharma Wanita food outlets, independently operated commercial businesses, and Kafe Kepompong, which functions as part of the hospital's psychosocial rehabilitation programme.

Approximately eleven food vendors operate under the RSMM Cooperative, while several additional food outlets are managed by Dharma Wanita. Other businesses operate through direct lease agreements with the hospital, including several franchise-based outlets.

A distinctive feature of RSMM is the operation of Kafe Kepompong, which forms part of the hospital's psychosocial rehabilitation programme. The cafés provide supervised employment opportunities for recovered psychiatric patients as part of their social

reintegration process. The continuation of this programme represents an important social objective that will be maintained throughout Project implementation.

Interviews conducted during the ESIA indicated that most tenants depend heavily on hospital staff, patients, and visitors as their primary customer base. Temporary interruption of business operations therefore has the potential to affect household income if relocation is not appropriately managed.

At the time of preparation of this Plan, detailed contractual information for all commercial tenants, including the remaining duration of individual tenancy agreements, rental deposits, prepaid rental periods, and tenant-funded improvements, has not yet been fully verified. The final list of affected tenants and the extent of potential economic displacement will therefore be confirmed by RSMM prior to the commencement of Phase 2 activities affecting commercial facilities. This verification will provide the basis for determining tenant-specific relocation and livelihood restoration measures.

### 3. Objective

The objectives of this Plan are to:

- ❖ avoid unnecessary interruption of tenant business activities;
- ❖ minimize temporary livelihood impacts resulting from construction;
- ❖ ensure transparent consultation and communication throughout relocation;
- ❖ maintain continuity of rehabilitation activities under Kafe Kepompong;
- ❖ provide fair relocation arrangements before construction commences in affected areas; and
- ❖ restore tenant business activities as quickly as practicable following relocation.
- ❖ ensure that any eligible financial interests, contractual rights, business assets, and demonstrated livelihood impacts associated with Project-related relocation are appropriately identified and addressed.

### 4. Scope

This Plan applies to:

- ❖ Cooperative food stalls;
- ❖ Dharma Wanita food outlets;
- ❖ independently operated commercial tenants;
- ❖ Kafe Kepompong rehabilitation cafés; and
- ❖ other commercial service providers that may subsequently be identified within the construction footprint.

The Plan also applies to any tenant or commercial operator subsequently identified through the pre-relocation verification process whose business activities may be physically or economically affected by Project activities.

## **5. Relocation Strategy**

Consistent with the phased construction approach, tenant relocation will only be implemented immediately prior to construction activities affecting the respective tenant locations.

Prior to commencement of Phase 2 construction, RSMM will:

- ❖ finalize the list of affected tenants;
- ❖ identify suitable temporary relocation locations within the hospital complex;
- ❖ conduct consultations with each affected tenant;
- ❖ agree on relocation schedules;
- ❖ prepare relocation logistics;
- ❖ ensure replacement business locations are operational before existing facilities are vacated.

Where feasible, temporary relocation will be undertaken within available hospital facilities to enable businesses to continue serving hospital staff, patients, and visitors during construction.

Should temporary relocation within existing buildings not be feasible, RSMM will identify alternative temporary arrangements that provide comparable access to customers while minimizing disruption to business operations.

Prior to relocation, RSMM will undertake a tenant-specific verification process to establish the applicable tenancy and business conditions for each affected tenant. The verification will include, as applicable, the type and location of business, tenancy or operating arrangement, remaining contract period, rental deposit or prepaid rental arrangements, tenant-funded assets or improvements, number of workers, dependence on hospital-based customers, and potential livelihood implications of relocation.

Where a tenant has a valid contractual arrangement, RSMM will review the applicable contractual terms and determine appropriate treatment in consultation with the affected tenant. Depending on the circumstances, this may include allowing the tenant to continue operating until the agreed relocation date, facilitating relocation to an alternative premises, returning eligible deposits or prepaid rental amounts, addressing eligible tenant-funded improvements, or providing other appropriate transitional assistance.

Where temporary relocation results in demonstrable loss of income or livelihood disruption, RSMM will consider additional transitional livelihood support proportionate to the nature and duration of the impact. The objective is to minimize disruption and support affected tenants in maintaining or restoring their business activities as soon as practicable.

## 6. Consultation and Disclosure

Prior to relocation, RSMM will conduct individual consultations with every affected tenant.

The consultation process will include discussion of:

- ❖ relocation schedule;
- ❖ proposed temporary location;
- ❖ duration of relocation;
- ❖ operational requirements;
- ❖ utility connections;
- ❖ signage;
- ❖ business continuity;
- ❖ specific needs of rehabilitation-related businesses such as Kafe Kepompong.

The consultation will also provide an opportunity for each affected tenant to discuss existing contractual arrangements, business assets or improvements, anticipated income disruption, relocation requirements, and any specific vulnerability or assistance needs. The outcome of these consultations will be documented and used to establish tenant-specific relocation arrangements before the affected premises are vacated.

## 7. Livelihood Restoration Program

To minimize temporary livelihood impacts, RSMM commits to implementing the following measures:

- ❖ Business continuity
 

Business interruption will be minimized through phased relocation scheduling and, where feasible, relocation to temporary premises before construction activities affect existing tenant locations.
- ❖ Tenant-Specific Baseline and Verification
 

Prior to relocation, RSMM will verify and document the baseline conditions of each affected tenant, including business type, tenancy arrangement, remaining contract period, number of workers, existing business assets or improvements, operational conditions, and dependence on hospital-based customers. Where feasible, information on business income and potential income disruption will also be documented.

## ❖ Temporary business space

Suitable temporary premises will be provided before demolition or construction activities commence in the affected area, where feasible. Temporary locations should provide reasonable accessibility for hospital staff, patients, and visitors.

## ❖ Relocation assistance

RSMM will facilitate reasonable relocation logistics, including coordination of moving activities, utility connections, and other practical requirements necessary to establish the temporary business location.

## ❖ Contractual and Financial Arrangements

Where an affected tenant has a valid tenancy agreement, RSMM will review and address the applicable contractual arrangements. Where Project-related relocation results in eligible loss of prepaid rental periods, deposits, tenant-funded improvements, or other contractual or financial interests, appropriate reimbursement, compensation, or other agreed arrangements will be considered, as applicable.

## ❖ Transitional Livelihood Assistance

Where temporary relocation results in demonstrable livelihood disruption, RSMM will consider appropriate transitional livelihood assistance proportionate to the nature and duration of the impact. Such assistance may include reasonable support necessary to facilitate relocation, maintain business continuity, or restore business operations following relocation.

## ❖ Business visibility

Directional signage and public information will be installed to inform patients, visitors, and staff of temporary tenant locations.

## ❖ Access management

Construction traffic management will maintain safe pedestrian access to relocated businesses.

## ❖ Priority for return

Existing tenants will be given priority to return to designated commercial areas following completion of redevelopment, where applicable and subject to hospital policies and tenancy arrangements.

## ❖ Kafe Kepompong

Special attention will be given to maintaining continuity of psychosocial rehabilitation activities. Temporary relocation arrangements will ensure that recovered psychiatric patients participating in the programme continue to receive supported employment opportunities during construction.

## 8. Grievance Mechanism

Affected tenants may submit complaints through the Project GRM.

Complaints relating to relocation, business disruption, access, compensation for agreed relocation assistance, or construction impacts will be managed through the integrated Project-level GRM described in Chapter 12.

Priority will be given to resolving livelihood-related complaints before construction activities commence in the affected area

Tenants will not be required to vacate affected premises before the applicable relocation arrangements and agreed transitional measures have been communicated and, where applicable, documented.

## 9. Monitoring

RSMM and the PMU will monitor implementation of this Plan throughout Phase 2 construction.

Monitoring indicators will include:

| Indicator                                                                                   | Target                            |
|---------------------------------------------------------------------------------------------|-----------------------------------|
| Consultation completed before relocation                                                    | 100%                              |
| Tenants relocated before demolition begins                                                  | 100%                              |
| Temporary business locations operational                                                    | 100%                              |
| Business interruption minimized                                                             | Continuous                        |
| Kafe Kepompong programme maintained                                                         | 100%                              |
| Livelihood grievances resolved within GRM timeframe                                         | ≥95%                              |
| Tenants offered opportunity to return after redevelopment                                   | 100% (where applicable)           |
| Tenant-specific baseline and contractual verification completed before relocation           | 100% of affected tenants          |
| Eligible relocation/transitional assistance provided in accordance with agreed arrangements | 100% of eligible affected tenants |

## 10. Adaptive Management

As detailed engineering design and construction sequencing are finalized, this Plan will be updated by RSMM prior to implementation of Phase 2.

The updated Plan will include:

- ❖ confirmed list of affected tenants;
- ❖ confirmed relocation schedule;

- ❖ confirmed temporary relocation locations;
- ❖ finalized relocation assistance measures;
- ❖ tenant-specific contractual and livelihood assessment;
- ❖ agreed transitional or financial assistance, where applicable;
- ❖ implementation responsibilities; and
- ❖ monitoring arrangements.

Any revisions will be communicated to affected tenants before relocation activities commence.

 Swiss Re
 CatNet® Risk Assessment Report

|               |                        |
|---------------|------------------------|
| Location Name | Hospital Mahdi futures |
| Report date   | 4/30/2026, 11:09:56 AM |
| Lat / Long    | -6.58315, 106.7807     |

|                   |                                            |
|-------------------|--------------------------------------------|
| County / Province | Jawa BaratBogorBogor Barat /<br>Jawa Barat |
|-------------------|--------------------------------------------|

|                                                                                   |                             |
|-----------------------------------------------------------------------------------|-----------------------------|
|  | Drought Score               |
|  | Heat Wave Score             |
|  | Heat Stress                 |
|  | Extreme Precipitation Score |

**Table 1 - Climate Risk Scores for four climate scenarios and nine future time steps**

|                             |          | 2030 | 2035 | 2040 | 2045 | 2050 | 2055 | 2060 | 2070 | 2085 |
|-----------------------------|----------|------|------|------|------|------|------|------|------|------|
| Drought Score               | SSP1-2.6 | 4.20 | 5.70 | 7.10 | 8.40 | 9.00 | 8.90 | 9.00 | 9.20 | 8.60 |
|                             | SSP2-4.5 | 6.30 | 7.50 | 7.50 | 8.50 | 8.40 | 8.70 | 8.80 | 8.80 | 8.90 |
|                             | SSP3-7.0 | 8.80 | 9.10 | 9.50 | 9.50 | 9.40 | 9.40 | 9.40 | 9.60 | 9.70 |
|                             | SSP5-8.5 | 6.70 | 8.20 | 8.60 | 9.00 | 9.40 | 9.50 | 9.60 | 9.80 | 9.80 |
| Heat Wave Score             | SSP1-2.6 | 6.70 | 7.30 | 7.90 | 8.20 | 8.50 | 8.70 | 8.90 | 9.00 | 8.90 |
|                             | SSP2-4.5 | 6.70 | 7.50 | 8.30 | 8.80 | 9.30 | 9.50 | 9.60 | 9.80 | 9.80 |
|                             | SSP3-7.0 | 6.70 | 7.60 | 8.50 | 9.10 | 9.50 | 9.70 | 9.80 | 9.80 | 9.90 |
|                             | SSP5-8.5 | 7.30 | 8.30 | 9.10 | 9.50 | 9.70 | 9.80 | 9.80 | 9.90 | 9.90 |
| Heat Stress                 | SSP1-2.6 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                             | SSP2-4.5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                             | SSP3-7.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
|                             | SSP5-8.5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Extreme Precipitation Score | SSP1-2.6 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.10 | 0.20 | 0.10 | 1.20 |
|                             | SSP2-4.5 | 0.00 | 0.00 | 0.10 | 0.10 | 0.00 | 0.10 | 0.20 | 0.50 | 1.40 |
|                             | SSP3-7.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.30 | 0.80 | 1.50 |
|                             | SSP5-8.5 | 0.00 | 0.10 | 0.00 | 0.00 | 0.10 | 0.20 | 0.70 | 0.70 | 2.90 |

Climate Risk Scores

|                    |               |                  |                     |                  |
|--------------------|---------------|------------------|---------------------|------------------|
| Negligible (0 - 2) | Minor (2 - 4) | Moderate (4 - 6) | Significant (6 - 8) | Extreme (8 - 10) |
|--------------------|---------------|------------------|---------------------|------------------|

**Table 2 - Climate Risk Levels for four climate scenarios and nine future time steps**

|                             |          | 2030        | 2035        | 2040        | 2045       | 2050       | 2055       | 2060       | 2070       | 2085       |
|-----------------------------|----------|-------------|-------------|-------------|------------|------------|------------|------------|------------|------------|
| Drought Score               | SSP1-2.6 | Moderate    | Moderate    | Significant | Extreme    | Extreme    | Extreme    | Extreme    | Extreme    | Extreme    |
|                             | SSP2-4.5 | Significant | Significant | Significant | Extreme    | Extreme    | Extreme    | Extreme    | Extreme    | Extreme    |
|                             | SSP3-7.0 | Extreme     | Extreme     | Extreme     | Extreme    | Extreme    | Extreme    | Extreme    | Extreme    | Extreme    |
|                             | SSP5-8.5 | Significant | Extreme     | Extreme     | Extreme    | Extreme    | Extreme    | Extreme    | Extreme    | Extreme    |
| Heat Wave Score             | SSP1-2.6 | Significant | Significant | Significant | Extreme    | Extreme    | Extreme    | Extreme    | Extreme    | Extreme    |
|                             | SSP2-4.5 | Significant | Significant | Extreme     | Extreme    | Extreme    | Extreme    | Extreme    | Extreme    | Extreme    |
|                             | SSP3-7.0 | Significant | Significant | Extreme     | Extreme    | Extreme    | Extreme    | Extreme    | Extreme    | Extreme    |
|                             | SSP5-8.5 | Significant | Extreme     | Extreme     | Extreme    | Extreme    | Extreme    | Extreme    | Extreme    | Extreme    |
| Heat Stress                 | SSP1-2.6 | Negligible  | Negligible  | Negligible  | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
|                             | SSP2-4.5 | Negligible  | Negligible  | Negligible  | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
|                             | SSP3-7.0 | Negligible  | Negligible  | Negligible  | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
|                             | SSP5-8.5 | Negligible  | Negligible  | Negligible  | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
| Extreme Precipitation Score | SSP1-2.6 | Negligible  | Negligible  | Negligible  | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
|                             | SSP2-4.5 | Negligible  | Negligible  | Negligible  | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
|                             | SSP3-7.0 | Negligible  | Negligible  | Negligible  | Negligible | Negligible | Negligible | Negligible | Negligible | Negligible |
|                             | SSP5-8.5 | Negligible  | Negligible  | Negligible  | Negligible | Negligible | Negligible | Negligible | Negligible | Minor      |

## Risk Levels

|            |       |          |             |         |
|------------|-------|----------|-------------|---------|
| Negligible | Minor | Moderate | Significant | Extreme |
|------------|-------|----------|-------------|---------|



## Appendix

### Definitions - Climate Risk Scores

| Score                        | Description                                                                                                                                                                                                                                                           | Risk                                                                                                     |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Fluvial Flood                | Based on the mean return period change of peak river discharge, covering annual extreme precipitation (3-day; 99th percentile) coupled with Swiss Re's fluvial flood zones.                                                                                           | Risk of flooding from fluvial floods (river floods) leading to property losses or business interruption. |
| Pluvial Flood                | Based on the mean return period change of annual extreme precipitation (1-day; 99th percentile) coupled with Swiss Re's pluvial flood zones.                                                                                                                          | Risk of flooding from pluvial floods (heavy rain) leading to property losses or business interruption.   |
| Storm Surge (Sea Level Rise) | Based on the median change in sea level height coupled with Swiss Re's storm surge zones.                                                                                                                                                                             | Risk of flooding from storm surge for coastal locations.                                                 |
| Extreme Precipitation        | Calculated as the 99th percentile of 1-day extreme precipitation events per annum.                                                                                                                                                                                    | Risk of heavy downpour may lead to property losses or business interruption outside of flood zones.      |
| Windstorm                    | Projected changes in extreme wind speeds, comparing the 98th percentile of near-surface wind velocity over a future 30-year period (e.g., 2015-2045 for the year 2030) with the historical baseline (1991-2020). It focuses on peak wind speeds rather than averages. | Risk of storm damage leading to property loss or business interruption.                                  |
| Wildfire                     | Based on the change in number of days with high Fire Weather Index (FWI >21.3).                                                                                                                                                                                       | Risk of wildfire leading to property losses or business interruption.                                    |
| Heat Wave                    | Based on the change in number of heatwave days per year.                                                                                                                                                                                                              | Risk of heat waves leading to increased cooling cost, reduced productivity, or business interruption.    |
| Heat Stress                  | Based on the number of days per year during which the maximum wetbulb globe temperature in shade (Twbg) is above 32°C.                                                                                                                                                | Risk of heat stress with impact on the business operations or employees.                                 |
| Drought                      | Based on the decrease in Aridity Index ( $AI = P/PET$ ), which is the ratio between precipitation (P) and potential evapotranspiration (PET). It does not directly reflect the intensification of short-term drought conditions.                                      | Risk of lack of water for business operations or destruction of agricultural yield.                      |



## Definitions – IPCC Scenarios

| Shared Socioeconomic Pathway(SSP)    | Abbreviations         | Description                                                                                                                                                                                                                                                                                                                                                            | Estimated global warming by 2080-2100 |
|--------------------------------------|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| SSP 1-2.6: Sustainability            | Reduced Emissions     | Gradual development towards a socially and economically sustainable path driven by an increasing commitment to achieving development goals. The global consumption is oriented towards low material growth as well as lower resource and energy intensity.                                                                                                             | 1.8°C<br>(Likely range: 1.3°C–2.4°C)  |
| SSP 2-4.5: Middle of the Road        | Middle                | Globally, slow progress is made towards achieving the sustainable development goals. Social, economic, and technological trends do not shift notably from historical patterns. Environmental systems experience degradation, despite progress being made in some parts of the world. An overall reduction in the intensity of resource and energy use is taking place. | 2.7°C<br>(Likely range: 2.1°C–3.5°C)  |
| SSP 3-7.0: Regional Rivalry          | Rocky Road            | Fragmented world with slow economic growth, weak global cooperation, and strong regional competition. Nations prioritize security and sovereignty, leading to limited investments in climate mitigation or adaptation. High population growth and uneven development drive environmental degradation and severe climate risks due to high GHG emissions.               | 3.6°C<br>(Likely range: 2.8°C–4.6°C)  |
| SSP 5-8.5: Fossil-fueled Development | No Emission Reduction | CO <sub>2</sub> emissions triple by 2075 leading to economic growth and a social divide. Investments are rather made towards technological adaptation to climate change and border control. This scenario is seen as an extreme case.                                                                                                                                  | 4.4°C<br>(Likely range: 3.3°C–5.7°C)  |