PROJECT: INSTITUTIONAL AND SUSTAINABILITY SUPPORT TO URBAN WATER SUPPLY AND SANITATION SERVICE DELIVERY

COUNTRY: REPUBLIC OF ANGOLA

ENVIRONMENT AND SOCIAL MANAGEMENT PLAN

October 2014

<table>
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<tr>
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1. Introduction

Angola’s 2025 vision identifies access to water supply and sanitation services for all Angolans as one of its goals. In this regard, improving water and sanitation coverage and service levels are included in the Water Sector Action Plan 2013-17 with an ambitious targets to revert the current situation where the majority of the urban and in particular the peri-urban population have limited access to these services. The objective is to reach 100% water and sanitation coverage in core urban areas by 2017 and these objectives support the Human Development Pillar in the National Development Plan 2013-2017 (PND).

Poor sanitation is a major environmental concern in Angola, both in the urban and peri-urban areas, and is the cause of numerous water-borne diseases, including cholera, malaria, typhoid and diarrhoea. In the peri-urban areas the problem is particularly serious as there is little access to proper sanitation. This is regarded as one of the main causes of cholera: outbreaks have occurred frequently in Angola, notably in 2006/2007 where Cuanza Sul and Lunda Norte had among the highest case fatality rates\(^1\), and more recently in 2013 in Cunene\(^2\). In Sumbe for example latrines are constructed precariously on hillsides, and raw sewage drains downhill directly onto other residential houses and plots. Water supply is intrinsically linked with sanitation; the unavailability of clean water and the prohibitive cost of buying water for the poor have contributed to highly unsanitary conditions\(^3\). This is compounded by the poorly functioning sewage and drainage systems where stormwater and sewage/wastewater often flow together down the same drains, particularly during the rains, and eventually flow into rivers or into the sea.

2. Brief Project Description and Key Components

The project mainly involves the creation and development of water and sanitation service delivery utilities in seven project beneficiary provinces (namely Cabinda, Bengo, Lunda Sul, Lunda Norte, Cuanza Sul, Niassa and Malanje).
Lunda Norte, Cuanza Sul, Namibe and Cunene) and strengthening and enhancing sector governance at local and national levels.

The project will consist of four components:

1. **Development of Provincial Water Supply and Sanitation Utilities**: This component aims to address the challenges or constraints of management and operations of water and sewerage systems that prevail despite massive investments in infrastructure developments, and to achieve high service levels to consumers on a sustainable manner. It will have two subcomponents for (i) initial support of the establishment process for Provincial Water Supply and Sanitation Utilities (PWSUs) and (ii) support to capacity development of the PWSUs.

2. **Sanitation and Water Systems**: this component will mainly focus on (i) addressing the sanitation challenges in Sumbe Town and feasibility studies for wastewater in coastal towns; (ii) support to expansion of access for water supply in peri urban areas in the provincial capitals; and (iii) establishment of three water quality laboratories.

3. **Capacity Development and Change Management**: The component will include the financing of the following activities: (i) strengthening of the institutional capacity at MINEA and DNA through support to enhance sector reform process and activities of Water Sector Institutional Development Commission (Comissão de Desenvolvimento Institucional do Sector de Águas), building capacity in supervising the operation of the utilities and their management contracts and establishing performance management systems; (ii) training and change management - strengthening the capacity of the Financial and Contract Management Unit (FCMU) within the DNA in procurement, financial, monitoring and evaluation and project management; training of staff of water and sanitation entities in particular young graduates and technicians; and exposure visits and work exchange programs; and (iii) Social mobilisation, and communication and awareness.

4. **Project Management**: The objective of this component is to provide support to MINEA/DNA with the capacity and resources for the proper management and execution of the project. The component will provide support for the recruitment of project management specialist, procurement specialist and project accountant. It will also support the preparation of the project implementation manual and the operational cost of the FCMU towards the execution of the project and project auditing.

While Components 1, 3 and 4 focus on institutional issues, Component 2 involves feasibility studies for the sanitation system for 5 coastal cities as well as the construction of a sanitation system for Sumbe Town as an extension of the on-going Sumbe Water Supply, Sanitation and Institutional Development Project (SWSSIDP). The sanitation system was initially included in
the SWSSIDP, which was categorized as a Category 2 project, but was deferred due to lack of available funding.

Sumbe Town is located along the coast some 330 km south of Luanda, and has an estimated population of about 143,000 people. A detailed design and ESIA were prepared in 2011/12 under the on-going project. The design comprised 70km of reticulation system with two pumping stations, six decentralized macrophytic lagoons (constructed wetlands) and a direct marine outfall. Concerns were raised about the environmental and social impacts of the design of the wastewater treatment plant (WWTP), namely untreated sewage being disposed of directly into the sea (albeit through a 3 km long pipe), and potentially about the need to acquire land for the lagoons. Consequently the design of the WWTP is now being revised. The redesigned WWTP will have a capacity of 7,500m3/day and will comprise pre-treatment, primary and secondary (and possibly tertiary chemical) treatment of all urban domestic wastewater. No industrial wastewater or stormwater will discharge into this system. The treated discharge from the WWTP will not be re-used for agriculture or other purposes. The DNA’s FCMU will engage a design and supervision consultancy for the Sumbe sewerage component, which will include updating the ESIA to address environmental and social impacts based on the revised design of WWTP which would in turn enhance this ESMP.

The design showed that all the sewer lines would be laid following the road layouts and will be within the road reserve in line with the Urban Planning Code. The ESIA noted that the system complies with the law for spatial planning and urbanism (Law No.3/2004, de 25 June). The specifications and technical design included restoration of road side infrastructure. The ESIA raised no major environmental concerns from the implementation of the WWTP or sewer lines as originally designed. The activity secured an implementation licence from the environmental authority (MINAMB) in 2013. However in order to mitigate any emerging issue during implementation, the mitigation plan included the enumeration of current activities (people and economic activity) within the boundary where sewer line and other ancillary facilities will be located during the design update and this will fully reflected in the updated ESIA.

3. Major Environmental and Social Impacts and Climate Change Risk

The most significant benefit derived from this project will be well-developed institutional capability for water and sanitation service delivery and eventually a cleaner natural and living environment, and greatly improved health standards in the seven provinces targeted by this project. This then has much broader implications in terms of better economic productivity, and it will contribute to boosting development, particularly in the tourism sector for which reliable water supply and sanitation facilities are essential.

The water supply intervention of the project involves support to the utilities to encourage more household water supply connections and also through stand pipes. This is mainly to utilise the existing network capacity and benefit from the recent large investment in infrastructure in the provinces. No negative environmental or social impacts are expected from this activity as it does
not involve new network expansion. It will mainly benefit the poor in the peri-urban areas by providing access to potable water supply.

Impacts associated with construction of the WWTP in Sumbe include dust emissions, soil erosion due to excavation works, disturbance to the public (e.g. by hindering access due to works), construction debris, solid and hazardous waste, and interruption of water supply or power supply in the event that existing pipes or wires are broken / cut during construction. The risk of HIV/AIDS will be small as most of the labour will be sourced from Sumbe town itself so the need for migrant / transient workers to join the workforce will not arise.

The location of the proposed WWTP is not confirmed, but two sites have been proposed: one by a fish landing site in Bairro da Ciudade about 500 m from the beach, and a second just south of Zona da Distribuição 3, roughly 1 km from the sea. Both proposed locations for the WWTP are uninhabited open spaces belonging to the GOA. One site is currently used as an open air public toilet by residents of the fishing village across the road. The other site is unused. During the detailed design, other locations may be identified. However, no resettlement is envisaged as the WWTP could be accommodated within the area available.

The sewage reticulation network will follow the main roads, and will lie within the road reserves, so will not necessitate resettlement or compensation either. The updated ESIA will assess the environmental and social impacts of all potential sites for the WWTP, with special consideration being given to climate change and the need to avoid involuntary resettlement.

During operation of the redesigned WWTP, the major negative impacts will be due to the treatment and disposal of sludge and backwash, screenings and sand. Disposal of bypass discharges and emergency discharges are also potential problems. As no industrial wastewater will be treated, the presence of heavy metals in the sludge or backwash is likely to be negligible. The only other major risk is that due to pipe ruptures. There is a risk of odours, but this will not be an issue if the WWTP is properly operated. Some methane gas will also be emitted, but given the size of the plant the quantities emitted will be too small to capture and can be considered insignificant.

Four of the provinces (Cabinda, Bengo, Cuanza Sul and Namibe) are located on Angolan coastline, so the main concern with regard to climate change is the potential rise in sea level. No information with regard to sea level rise specifically for Angola is available, but the IPCC’s Fifth Assessment Report (2013) estimates that along the coast of Central Africa, an anticipated rise of 0.5 m to 0.6 m can be expected by the end of this century. In addition, Sumbe town has experienced serious floods in the recent past (2011) and is still considered to be prone to flooding - more so as a result of intense rainfall triggered by climate change. This particular aspect will be duly considered in the design of the system.

4. Enhancement/Mitigation Measures and Complementary Initiatives
Impacts associated with construction activities will be mitigated through proper supervision of the contractor, and by binding the contractor in the contract documents to ensure that impacts are avoided or minimised. The Sumbe Sanitation Project bidding documents contain an environmental management plan that specifies environmental, social and occupational health and safety requirements for the contractor’s/workmen’s camp; excavation and earthworks; transportation and storage of materials and equipment; storage and handling of chemicals and dangerous substances; solid waste management; noise; traffic management; stormwater and wastewater; pest control; sanitary conditions; fire prevention and control; protection of environments and natural resources; control of impacts on historical, cultural and ethnic heritage; temporary disruption of infrastructure and services; requirements on completion of the works; and local community relations (including safety signage and providing information on any disruptions to the public).

Depending on the site selected for the WWTP, sanitation blocks may be provided for households that are not connected to the sewer line who are located in the vicinity of the proposed WWTP site. As a complementary measure, consideration will be given to converting any additional vacant land or wasteland in the vicinity of the WWTP into a recreational area (park with playground).

With regard to impacts during the operation phase, the disposal of sludge and backwash are site specific impacts, both of which can be mitigated through methods and standard operating procedures for disposal which will be established during the detailed design stage. In this regard, the design criteria specify the desired quality of treated effluent and the need to establish sludge and backwash disposal methods to be employed during the operation and maintenance phase. A solid and hazardous waste management plan will be drawn up to address the issues of waste management. The risk of pipes rupturing/leaking will be minimised through proper design, careful supervision during construction and regular maintenance. Institutional, capacity building and technical support under other components of this project will ensure that the WWTP functions optimally, the quality of treated effluent eventually discharged to the sea is of an acceptable standard, and sludge and backwash are treated appropriately and in line with international standards prior to disposal.

Odour will be reduced with proper aeration during treatment of the wastewater. Technologies are now available to capture methane emissions, but in general quantities of methane emitted from wastewater treatment plants of this size are too small to capture.

The location of the WWTP and its associated infrastructure will ensure that it will not be affected by sea level rise and/or flooding. Sewage distribution lines will follow existing roads or tracks, and in steep sections, erosion protection measures will be incorporated along these routes. Sewer lines in the low lying areas of the city will be located on higher ground such that they will not be affected by any potential rise in sea level. Moreover, the infrastructure has been designed for a 20 – 30 year period which falls below the period of anticipated 0.5 m sea rise by the end of the century.
In order to extend the benefits derived from the physical infrastructure, an extensive gender sensitive hygiene awareness campaign will be conducted. Furthermore to enhance the participation of beneficiaries in the overall project implementation activities, social mobilization and awareness activities will be conducted. For this, a specific project communication strategy will be prepared. A sector gender policy, strategy and action plan will also be prepared to inform the project activities with regard to gender streamlining.

To ensure long term environmental sustainability, the project will provide technical assistance to create capacity including those related to environmental and social management. The new utilities to be formed will be assisted to develop their environmental management plans, water quality monitoring plans, occupational health and safety plans, leakage monitoring plans, energy and chemical management plans, etc, among others. The project support will also include beneficiary assessment for affordability and willingness for payment in order to tune service levels and cost recovery.

For safeguarding public health and the environment, the project includes capacity building in water quality monitoring and laboratories will be established in this regard. This will enable the utilities to monitor their quality of water supplied, effluent quality from the WWTP, and water quality parameters in fresh water sources.

5. Environmental and Social Monitoring Program

Component 1, 3 and 4 will focus on strengthening the environmental and social safeguard capacity within the DNA, FCMU (including the FCMU’s Environmental and Social Unit), as well as the 7 provincial water and sanitation utilities. As for Component 2, environmental and social monitoring is mainly applicable to the Sumbe WWTP. The updated ESIA will contain an ESMP to manage all identified impacts and enhance identified benefits.

Issues that will be monitored during the development of the provincial water supply and sanitation utilities, capacity development and project management include:

- The development of a gender and social charter for each utility;
- The development of utility environmental management plans, water quality monitoring plans, occupational health and safety plans, leakage monitoring plans, energy and chemical management plans.
- Hiring of the social / gender expert to assist the DNA, FCMU/ESU in mainstreaming gender in its operations and into its environmental and social safeguards;
- The development of a Gender Policy for the sector which will be based on gender assessment and intensive consultations with relevant stakeholders;
- Strengthening of the environmental and social safeguards of the DNA, FCMU, PWSUs
- Capacity building of the existing environmental and social safeguards of the DNA through increased the capacity of the Environmental. Health and Safety Safeguards expert
• Social mobilization initiatives and effective communication;
• Inclusive hygiene promotion.

Issues that will be monitored during construction of the Sumbe WWTP include:

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<th>Mitigation Measure</th>
<th>Monitoring Indicator</th>
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<tr>
<td>1. Traffic safety</td>
<td>No. of traffic accidents recorded due to works</td>
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<td>2. Damage to electricity lines and water supply pipes</td>
<td>No. of times water pipes and electricity lines are damaged</td>
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<tr>
<td>3. Occupational health and safety of the labour force</td>
<td>No. of accidents to workers recorded on work sites</td>
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<tr>
<td>4. Dust emissions and pollutants during earthworks</td>
<td>No. of complaints recorded in relation to noise and/or dust</td>
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<tr>
<td>5. Disrupted access for the public due to construction</td>
<td>No. of filed complaints from residents</td>
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<td>6. Disposal of solid and liquid waste</td>
<td>No. of agreed trips and quantities of ferried waste to designated damping locations</td>
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<tr>
<td>7. Management of chemicals, oils, and other hazards</td>
<td>No. of violations against standard charter</td>
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<td>8. Implementation Gender Plan</td>
<td>Gender specialist hired</td>
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During operation of the Sewage System and WWTP, monitoring of the following will be critical:

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<tr>
<th>Mitigation Measure</th>
<th>Monitoring Indicator</th>
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<tr>
<td>1. Gender charter developed by each utility</td>
<td>Approved Charter available</td>
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<td>3. Adherence to OHS at workplace</td>
<td>Environmental management, OHS management and Emergency Response plans in place (at each utility/at Sumbe WWTP)</td>
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<td>4. FCMU/ESU and utility staff trained</td>
<td>% of trained staff (verification: training records)</td>
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<tr>
<td>5. Proper functioning of the water treatment plant to</td>
<td>% of time WWTP is functioning</td>
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<tr>
<td>ensure full treatment of sewage, and to reduce odour</td>
<td></td>
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<tr>
<td>and methane emissions</td>
<td></td>
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<tr>
<td>6. Quality of influent/wastewater entering the WWTP</td>
<td>No. of malfunctioning incidents due to unsuitable wastewater</td>
</tr>
<tr>
<td>7. Sewer blockages and pipe rupture</td>
<td>No. of blockages or failure incidents</td>
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<tr>
<td>8. Quality of final effluent (ie after treatment)</td>
<td>No. of incidents in violation from national set standards</td>
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<td>discharged into the aquatic environment (either the sea</td>
<td></td>
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<td>or a water</td>
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The project support to establishing water quality laboratories will facilitate monitoring of influent and effluent quality, as well as the quality of sludge and backwash. Long-term monitoring will establish whether the overall project objectives have been realized, in terms of percentage of the population with access to sanitation facilities, and prevalence of water borne diseases such as diarrhoea, dysentery, typhoid and cholera.

### 6. Public Consultations and Disclosure Requirements

The key stakeholders of the project are the MINEA, DNA, the seven beneficiary provinces (Cabinda, Bengo, LundaSul, Lunda Norte, Cuanza Sul, Namibe and Cunene) water and sanitation utilities, residents of the provincial capitals. Other important stakeholders are MINAMB, the Ministry of Agriculture, Ministry of Health, Ministry of Education, the Ministry of Family and Women Promotion, UNICEF, WB, EU and civil society.

The inclusion of the redesigned WWTP which was not part of the original design necessitates further consultations during the updating of the design of the Sewerage system including the WWTP. As part of the process of design review and updating the Sumbe sanitation system ESIA, further inclusive and extensive public consultations will be held - this is also a mandatory requirement under Angolan law. Once the updated ESIA has been prepared, this ESMP will be updated accordingly. This aspect has been included in the mitigation plan.

### 7. Institutional Arrangements and Capacity Building Requirements

The technical assistance component of the project includescapacity building related to environmental management. The new utilities to be formed will be assisted to develop their

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<td>9.</td>
<td>Chemical quality of sludge to ensure that it does not contain heavy metals, pathogenic or other toxic material before disposal</td>
<td>No. of incidents in violation from national set standards</td>
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<tr>
<td>10.</td>
<td>Chemical quality of backwash to ensure that it does not contain heavy metals, pathogenic or other toxic material before disposal</td>
<td>No. of incidents in violation from national set standards</td>
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<td>11.</td>
<td>Disposal of solid waste</td>
<td>No. of agreed trips and quantities of ferried waste to designated damping locations</td>
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<td>12.</td>
<td>Bypass and emergency discharges</td>
<td>Procedures for leakage, chemical spills, bypass and emergency discharges, water quality monitoring plans in place</td>
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environmental management plans, water quality monitoring plans, occupational health and safety plans, leakage monitoring plans, energy and chemical management etc. Capacity building in the DNA as well as in the water utility companies in the provinces will enable these agencies to better adapt to climate change, particularly in the planning of water supply and distribution and wastewater infrastructure. Staff of the utilities, board members and other key staff of relevant institutions will be trained on various aspect of utility management which would greatly contribute to environmental awareness.

During the construction, operation and maintenance phases of the project, the FCMU’s Environmental & Social Unit will be responsible overall for environmental and social monitoring, ensuring that mitigation and enhancement are incorporated, and that the AfDB Operational Safeguards are adhered to.

As mentioned above, the project has a strong capacity building component, and includes supporting the FCMU’s ESU by providing a sociologist/gender specialist to enhance the ESU’s team composition. Thus DNA’s capacity in terms of ensuring that gender concerns are mainstreamed and safeguarded, social mobilization, gender inclusive communication and awareness with regard to sanitation issues will also be supported.

8. Estimated Costs

The estimated cost for environmental and social mitigation including for measures for enhanced long term environmental sustainability is estimated at around USD 8.25 million and this is included in the various project activities.

9. Implementation Schedule and Reporting

It is expected that the project will commence in January 2015 and be completed by end of 2019. The Sumbe sanitation works is expected to be completed by mid-2018.

The contractor will have an Environmental and Social Expert on his staff who will report to the Site Engineer’s Environmental and Social Expert. The latter will then report on a weekly basis to the FCMU/ESU, who in turn will report on a quarterly basis to MINAMB’s Fiscalisation Unit. This will be streamlined in the procurement documents. The Environmental and Social Unit (environmental specialists, health and safety expert and sociologist/gender expert in the FCMU/ESU) will monitor the implementation of the ESMP. A quarterly report will be sent to the Bank for review and follow-up.

10. Conclusion
It is expected that the project will greatly improve sector governance, strengthen institutional capacity and efficiency in the water and sanitation sector institutions at central and provincial level and improve access and service delivery in all seven targeted provinces. The project will also spearhead the currently lacking inter-sectoral coordination and cooperation with regard to the provision of water and sanitation services.

The current sanitation situation in Sumbe Town is extremely poor and raises serious health concerns. In this respect, the project will provide much needed sanitation services to the town, and will result in improved health status of the residents of Sumbe and consequently contribute to a better quality of life. The negative impacts of the project can all be managed – no irreversible or serious adverse impacts are anticipated provided all proposed mitigation measures are implemented, the contractor operates in a diligent manner, the quality of final effluent discharges, sludge and back wash are monitored and managed, and that during operation the plant functions optimally.

11. References and Contacts

References:

- The Basic Environmental Law No. 05/98 of June 19th 1998
- Soapro (2012); Environmental Impact Study of the Project of Water Supply and Wastewater Sanitation System of Sumbe City. Non-Technical Summary (Translated April 2014)
- Soapro (2012); Environmental Impact Study of the Project of Water Supply and Wastewater Sanitation System of Sumbe City. (Translated April 2014)
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- SWSSID Bidding documents
- Environmental Impact Study of the Project of Water Supply and Wastewater Sanitation System of Sumbe City, Non-Technical Summary, SOAPRO, April 2014.

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