ONGAWA
ENGINEERING FOR HUMAN DEVELOPMENT

ARUP

MARCH 2020

WASH ILHA JOSINA MACHEL MOZAMBIQUE

ENVIRONMENTAL IMPACT ASSESSEMENT SUMMARY

Through Arup's Global Challenge Programme 2018, a number of projects linked to the SDGs 6 and 7 were selected for Arupians to actively work with partner organisations to improve the quality of life of the world's poorest and most marginalised people. The goal of this programme is to co-create solutions that are affordable, scalable, technically robust and adopted in practice. One of the selected projects is the Water, sanitation and hygiene (WASH) project in rural Manhiça in Mozambique, a collaboration between the Arup Madrid office and the NGO ONGAWA. The project aims to improve safe water sources and the sanitation and hygiene situation in the Puesto Administrativo of Ilha Josina Machel located in the district of Manhiça, Mozambique.

The Arup Madrid office has collaborated with ONGWA on technical aspects of the project and carried out an Environmental Impact Assessment (EIA) of the project to evaluate positive and negative impacts of the project on the environment and on the local community. This report provides a concise summary of what the EIA consisted of, how it was carried out and what its conclusions were.

The following points outlining the peculiarities of this EIA should be noted:

- The objective of the EIA was not to comply with local environmental legislation, but rather to provide the technical team and ONGAWA with knowledge of the potential impacts of the work.
- The project under study has a very strong social dimension and, therefore, the positive impact on the well-being of the local population is significant.
- Limited available information related to the environmental and social values of the area has limited the degree of analysis of the potential impacts.
- The preventive and corrective measures have been adapted to the reality of the project area, considering the limitations of access to materials and machinery, specialised personnel and management of certain environmental and social aspects.

As a first step in the preparation of the EIA, an analysis of the current situation of the project area was carried out. To this end, and with the collaboration, experience and field data of ONGAWA and the experts from Arup, the most notable aspects regarding the population and the existing water supply and sanitation infrastructures were identified. This included the most vulnerable families and schools in the project area.

The main conclusions of the current situation analysis show that the coverage of water and sanitation services is particularly low and of poor quality both for vulnerable families and in schools.

In view of the current situation, the project proposes an intervention to improve access to Water, Sanitation and Hygiene (WASH) at the community level and in schools in the same area, with the aim of achieving a greater impact by acting on all three components (water, sanitation and hygiene) and at both family and school level.

In addition, it is proposed to support the Manhiça District in planning the water supply infrastructure so that it can better prioritise and distribute its resources and increase the sustainability of services.

Once the project and the actions required for its execution were defined by the project team, the specific areas where actions should be taken were identified taking into account the design, construction and operation phases. A territorial analysis was carried out from the point of view of the physical, biotic and socioeconomic environment. The aim was to identify the sensitive elements of the environment on which the project could have a positive or negative impact.

In relation to this aspect it is important to highlight that no official, extensive and detailed databases have been found where the necessary information can be consulted and that in most cases the information has been obtained from international organisations or from the field visits themselves.

One of the most sensitive aspects of the physical environment in relation to the project is the groundwater, which is characterised by a high water table level and a low water flow rate. In addition, it should be noted that the groundwater generally has a high saline level and sometimes contains contaminating substances.

As for the biotic environment, the project area is characterised by a relatively dispersed tree vegetation, pastures and some agricultural and livestock lands of family production. As for the fauna, more than 100 mammals and 470 species of birds have been identified, although no protected or sensitive species or areas have been located in the area.

From the analysis of the population of Ilha Josina Machel, and specifically of the target population of the project (vulnerable families and schools), it stands out that the inhabitants of the area are mainly women and girls, doubling the number of men in some cases. Along with children, women are the object of special attention in the project, since they form one of the most vulnerable groups, especially when they have to take care of the family with small children (generally single-parent families) or when they are elderly.

It should also be mentioned that non-potable water is one of the main causes of diarrhoeal diseases in Mozambique and is one of the main causes of mortality among children under five.

In terms of the area's economy, the main activity of the population of Ilha Josina Machel is concentrated in small scale agriculture and cattle farming.

Finally, it should not be forgotten that Mozambique is a country hit by the effects of climate change because of its geographical location, as reflected in the publication Global Facility for Disaster Reduction and Recovery.

As global temperatures rise, Mozambique is experiencing an increase in the frequency and severity of inland droughts and flooding, both experienced in Ilha Josina Machel in the last few years.

As a next step and once the actions that need to be carried out to execute the project and the characteristics of the environment are known, a matrix analysis of potential positive and negative impacts and risks was carried out. Due to the lack of precision of the data obtained, a qualitative rather than quantitative analysis was undertaken in order to consider each impact to the same level of detail, providing the study with the necessary homogeneity for its understanding.

The positive impacts to be highlighted are the benefits the project will have on the health of the population. By improving access to clean water and providing access to sanitation, the project will reduce the dispersion of contaminated water and proliferation of contagious insects, which in turn will improve cohabitation and assistance in schools.

This effect is expected from the initial design phase in which local communication teams will contribute to the dissemination of good practices in the use of facilities and personal hygiene. It is also important to highlight the impact on local employment; the project provides for the training of local inhabitants to form part of the monitoring, dissemination and training teams, as well as local craftsmen capable of reproducing the implementation of these infrastructures in other places.

Both the risks and the significant negative impacts identified from the project are related to the potential of the project to generate local and isolated water and soil contamination events, especially during the construction phase. In this respect, it is important to note that these impacts and risks are considered to be of medium significance and it has been possible to define preventive and corrective measures that will help to minimise them.

In this respect, the EIA includes the preventive, minimising and corrective measures necessary for the correct management of the identified impacts.

The definition of the measures has been adapted to the reality of Ilha Josina Machel and to the availability of resources and, therefore, they have sometimes had to be adequate to try to achieve the greatest possible success with the means available.

Priority has been given to manual work, as road access to the area is complicated and the availability of machinery is limited, potentially reusable working materials are proposed, and the use of plastic has been limited to very specific cases.

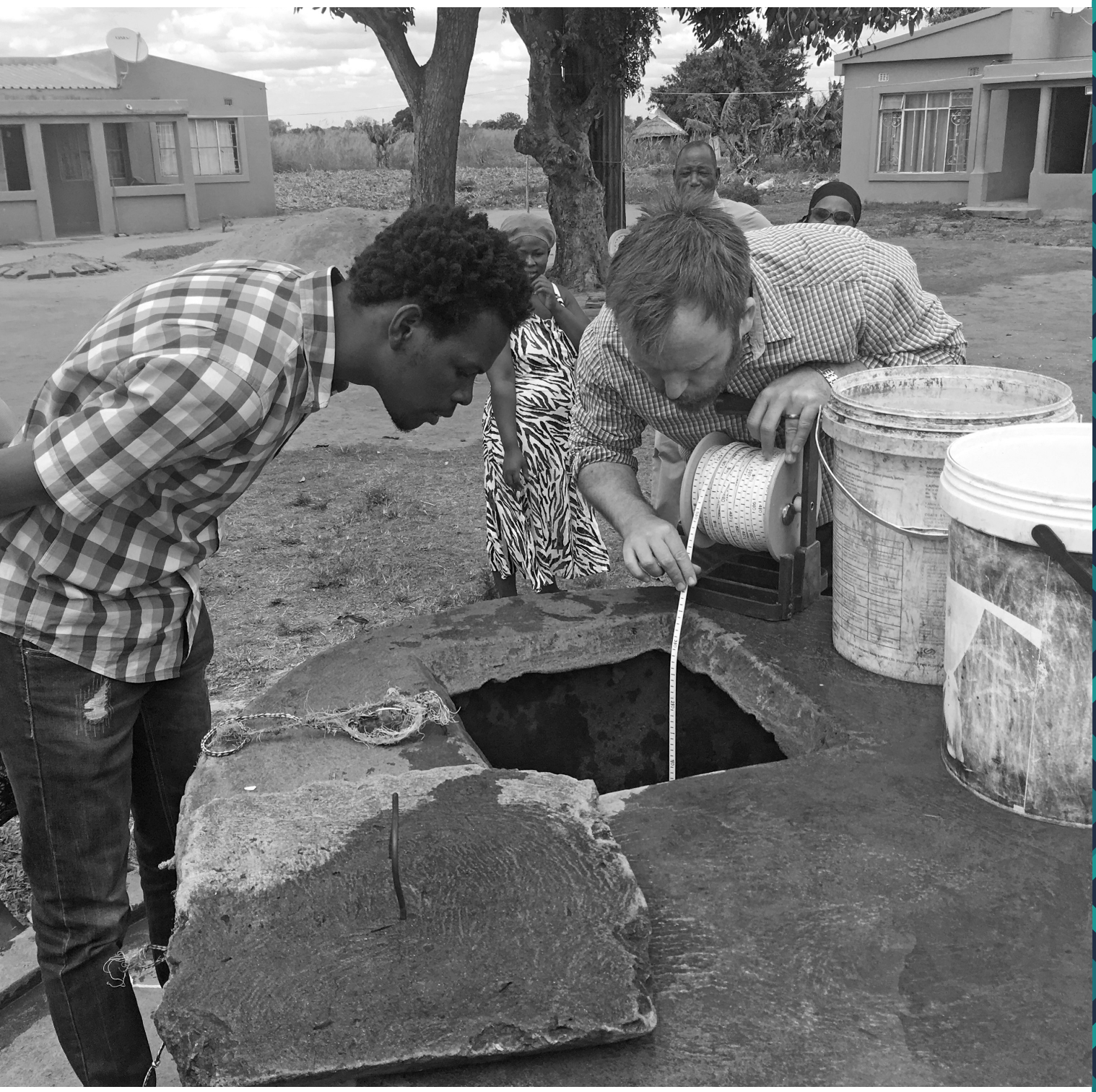
In spite of the local limitations, the measures proposed in the construction phase emphasise the importance of the correct management of hazardous materials and waste, as well as the machinery that could be used, the involvement of and respect for local people, the conservation of existing natural values and the promotion of local employment.

For the operation phase, measures have focused on the safe sealing of existing latrines that are no longer used, the safe maintenance of new latrines, the maintenance of the water pumps, the regular monitoring of the water pumps water quality, the generation of local employment and the hygiene awareness of the local population.

Finally, the EIA has defined an Environmental and Social Surveillance Program whose purpose is to define a follow-up system that allows verification of the degree of compliance in the implementation of the measures indicated, the success in their progress or the need to define new measures, all of this in both the construction and operation phases.

For the implementation of the Environmental and Social Surveillance Program, the need has been identified for a local person, ideally from the Manhiça District, with knowledge in the field who would be responsible for the continuous monitoring of the program.

The full EIA report is available in Portuguese and Spanish upon request.



ARUP

Alfonso XI, 12 | 28014 Madrid, España
+34 91 523 92 76 | www.arup.com

ONGAWA
ENGINEERING FOR HUMAN DEVELOPMENT

ONGAWA
C/Vizconde de Matamala 17, 3ª planta,
28028 Madrid, España