



Netherlands Commission for
Environmental Assessment

BOLIVIA (DRIVE)

La Paz Water Efficiency and Early Warning Project Bolivia



17 April 2018
Ref: 7253



Advice of the Secretariat

To Netherlands Enterprise Agency (RVO.nl)/DRIVE

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From The Netherlands Commission for Environmental Assessment (NCEA)

Date 17 April 2018

Subject **La Paz Water Efficiency and Early Warning Project – Bolivia**

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Reference 7253

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1. Introduction

The Bolivian Public Social Enterprise for Water and Sanitation (*Empresa Pública Social de Agua y Saneamiento — EPSAS*) has submitted a request for support to the RVO DRIVE facility, for the upgrade and renovation of the Pampahasi Water Treatment Plant. This plant is located in the city of La Paz, Bolivia. EPSAS has provided a *Programa de Prevención, Mitigación y Plan de Aplicación y Seguimiento Ambiental (PPM–PASA)* on this project to the RVO. The PPM–PASA, dated November 2017, was prepared by EPSAS, with the support of Royal Haskoning DHV.

The RVO will base their decision to fund the project, and if so, under what conditions, in part on the PPM–PASA for the project. The RVO has asked the Netherlands Commission for Environmental Assessment (NCEA) to review this PPM–PASA to advise whether it is sufficient for this purpose. In this document the NCEA sets out the main review conclusions and gives specific recommendations aimed at ensuring that adverse project environmental and social risks and impacts will be effectively avoided, minimized and mitigated.

2. Approach and methodology

This NCEA review of the PPM–PASA constitutes a Quick Scan, desk study by the NCEA Secretariat. No site visit was undertaken. The NCEA did not mobilise a working group of experts. We have engaged one external expert: an assessment and due diligence specialist, who is experienced in ESIA for water treatment, and has a good understanding of the Bolivian context generally, and the drinking water treatment situation in La Paz specifically.

The NCEA is aware that, according to the Bolivian procedure, the document presented is formally not an ESIA, but an Environmental Impact Prevention and Mitigation Programme (PPM) and Environmental Implementation Monitoring Plan (PASA). Comparable to an Environmental and Social Management Plan (ESMP), in IFC terms. An ESMP can be an output of the ESIA process, but can also be developed without a comprehensive, full-scale ESIA. The latter situation may be suitable where a project's social and environmental impacts are clear-cut and managing them is straight forward. The Pampahasi PPM–PASA document, seems to have resulted from a more comprehensive process, that encompassed key elements also expected in an ESIA, such as consultation and comparison of mitigation alternatives. We have therefore reviewed the document in light of our understanding of good practice in ESIA, and not as a stand-alone ESMP.

The NCEA has also considered the IFC Performance Standards in its review. Particularly relevant to this project are: PS1 (Environmental Assessment and Management of Environmental Social Risks and Impacts), PS3 (Resource Efficiency and Pollution Prevention), and PS4 (Community Health, Safety and Security). The document content was also reviewed in light of the World Bank Group Environmental, Health and Safety Guidelines for Water and Sanitation Infrastructure.¹

¹ The guidelines used were the 2007 version. The World Bank Group is in the process of undertaking a technical revision of all of the environmental, health and safety guidelines, and the updated version of the water and sanitation sector infrastructure will be completed in the course of 2018.

Note that some time has passed between the RVO's request to review the PPM-PASA, and the NCEA's review. This is because the document was initially delivered in Spanish. It was agreed that the NCEA would undertake the review when the English language translation was available. However, when this translation appeared to be delayed, the NCEA proceeded based on the Spanish document. Some information was missing from this document, namely annex 1, 2, 8, 11 and 12. The NCEA was therefore not able to assess the content in those Annexes.

3. Key conclusions and recommendations

Overall, the NCEA concludes that the PPM-PASA adequately addresses the relevant impacts, and proposes a sound management approach, that is commensurate with the level of risk for this project. Chapter 4, below, provides a number of observations and suggestions for further strengthening this approach. We give some recommendation on improving the content and presentation of the report, for strengthening the management of impacts during project implementation, and for addressing management of dangerous substances and solid waste.

In addition to the detailed comments on the PPM-PASA in the next chapter, the NCEA would like to make two points concerning the planning framework for the project. These are set out below.

Is ESIA needed according to Bolivian requirements?

Firstly, it is not clear what level of assessment the existing Bolivian national regulations require for this project. These ESIA regulations include compulsory screening of all investment projects, including expansion and upgrading. An initial screening form (the 'ficha ambiental') is used to establish the project category and associated environment and social impact assessment requirements. According to a note referenced in the PPM-PASA the Pampahasi expansion and upgrading project was screened as a category III project² — this means that according to Bolivian legislation, it does not require a full Environmental and Social Impact Assessment. A PPM-PASA will suffice. However, later communication received through the RVO project officer suggest that the screening by the Ministry has not yet been concluded.

The NCEA recommends that the RVO request clarification on this point, and if additional assessment and reporting is needed to meet Bolivian requirements, consider the consequences for stakeholder engagement, the NCEA's review and other project decision-making. Ideally, these are streamlined.

Strategic considerations on water use and waste water volumes

Secondly, the NCEA wants to draw attention to longer-term induced impacts that the project may contribute to. These were also raised during the consultation on the project that has taken place. The region of La Paz is already experiencing water shortages, and an upgraded water treatment plant, with increased capacity, will add to this problem. The PPM-PASA proposes water conservation campaigns to promote responsible water consumption and to monitor the water levels at the raw water reservoirs. While more strategic interventions may

² On June 19 2017, via a note issued by the Vice Ministry of Environment, Biodiversity, Climate Change and Forest Development and Management (VMABCCGDF).

be outside the scope of the mandate of EPSAS, the NCEA notes that sound watershed planning would also help ensure the project's long-term sustainability. The PPM-PASA does not set out the planning framework for the project, nor address risks to the project related to the continuity of the supply, or to potential future degradation in its general quality.

Of a similarly strategic nature are the impacts of increased generation of domestic wastewater. This is identified as a potential impact in the PPM-PASA and the proposed mitigation measure is that 'technologies will be proposed for the provision of sewage, expansion and wastewater treatment in the Pampahasi system'. Ideally, an intervention such as this project, is paired with a parallel increase in wastewater collection and treatment capacity.

The NCEA recommends that the project is embedded in a strategic approach to water delivery and waste water treatment, to ensure long term sustainability. However, we are aware that this may be beyond the scope of this project.

4. Detailed observations

4.1 Report structure, content and presentation

The PPM — PASA is a well presented and logically structured document and reflects the key elements of an ESIA and ESMP as stipulated under PS1. The report includes a detailed executive summary, the project context (including some past history), a full description of planned activities during the construction and operational phases, a description of existing environmental and socio-economic conditions, identification, prediction and evaluation of impacts, mitigation measures for all impacts, an environmental monitoring plan as well as several additional action plans addressing specific topics. Consultation undertaken is described in the report, and a neighbourhood relations plan and grievance mechanisms presented. Annex 1 gives an overview of the PPM-PASA contents, and some additional reflections on these contents.

There are a few improvements that could be made to the report. Firstly, the executive summary could be improved by presenting a more succinct summary of key (i.e.: most significant) impacts and mitigation measures rather than simply copying the tables already presented in the main report.

Secondly, while the impact assessment in the PPM-PASA is comprehensive and covers the types of impacts related to this activity, the methodology and presentation could have been more focussed and understandable. The report identifies, predicts and evaluates environmental and social impacts through a lengthy and somewhat repetitive process (as described in Annex 2). In addition, the presentation is confusing and repetitious and could have been significantly simplified to make it much easier for the reader to comprehend. The utility of the impact prediction section is questionable. The information is largely qualitative and where values are provided, they are not very useful — for example, a table presents gaseous emissions (in kgs) from some of the machinery, but no context is provided, there are no reference values for what is 'normal' and the utility of this information provided is

therefore unclear. The summary of key impacts could have been significantly improved by providing a more in-depth analysis of the impacts deemed to be negative, permanent and longer term.

The points made above do not necessitate a revision of the PPM-PASA. It provides a good basis for continued stakeholder engagement and for decision-making. However, should a revision of the document be planned, the NCEA recommends addressing the comments made above.

4.2 Ensuring impact management during project operation

The PPM-PASA presents a comprehensive approach to the management of the project's environmental and social impacts. Mitigation measures are outlined. The monitoring plan presented should generally be sufficient to provide information on the effectiveness of the proposed mitigation measures and any remediation measures needed. Naturally, the actual implementation of the ESMP approach will determine the degree to which impacts are indeed effectively managed. To this end, it will be important that suitable capacity is mobilised, and that the necessary arrangements are effectively translated into contractual agreements. These two points are further elaborated below. In addition, continued community engagement and adequate oversight will also be important.

Capacity for impact management

IFC Performance Standard 1 calls for a clear policy within the client organization to guide ESMP implementation and establish the framework for sound environmental and social performance, as well as capacity within the organization to ensure policy conformance and effective implementation. EPSAS will be the body responsible for the daily operation and management of the upgraded WTP as well as for effective environmental (and social) impact management once the plant is operating.

The PPM-PASA/ESMP refers to environmental management responsibilities during project realisation (Chapter V, section 9, functions and responsibilities) but no reference is made to day-to-day environmental and social impact management during project operation. While EPSAS has detailed operational guidelines for day-to-day plant management, as well as national guidelines to ensure the sustainability of their services, it is not clear whether they have a specific internal environmental policy or dedicated staff responsible for environmental and social management of daily EPSAS activities (including effective ESMP implementation, during the operations).

The NCEA recommends to clarify with EPSAS how structural capacity for ESMP implementation is secured, to ensure that the concerns raised during in the ESMP are addressed not just during construction but also during the subsequent operational phase.

Environmental and social impact management programme

An overview of mitigation measures is provided in the PPM-PASA, in Table 25. These measures are generally sensible and within standard norms for the types of impacts

identified. To increase the likelihood of effective mitigation implementation, it would be useful if the table also stipulated *how* each measure will be implemented contractually:

- as a design recommendation, included in the standard contract specifications,
- included in the special contract specifications, or
- as a general recommendation (not included in design or technical specifications but rather as a general action that should be implemented by EPSAS or other institutions).

The NCEA recommends that it is agreed with EPSAS how the mitigation measures are implemented in contracts with other parties.

4.3 Dangerous substances and solid waste management

There are two types of impacts that could be addressed more comprehensively in the PPM-PASA. These are set out below.

Risks from the transport and handling of dangerous substances

The current design incorporates the use of chlorine gas for disinfection during the water treatment process. To reduce any risks associated with the handling of chlorine gas (and other substances) the PPM indicates that measures will be put in place to reduce these risks, and that there will be technical and administrative control during handling, and that workers will be required to use personal protection equipment. The risk and contingency plan and the security and hygiene plan are obviously also designed to address such risks. However, the exact measures needed are not defined.

The NCEA recommends that specific measures are agreed with EPSAS to ensure safe handling of chlorine gas. The WB group EHS guidelines mentioned in chapter 2 provide guidance for this.

The document makes no mention of the substantial risks associated with the transport and storage of chlorine gas — which may be imported from neighbouring countries and transported large distances along dangerous roads.

The NCEA recommends that the RVO discuss with EPSAS what the risks of chlorine gas transport are, and how these may be mitigated. If these risks are a concern, note that alternatives substances could be explored.

Generation of solid waste from process residuals

The water treatment process will result in an accumulation of residual waste, including packaging and containers from the various chemicals and materials used during treatment as well as sludge containing contaminants/suspended solids from the raw water treatment process. This will most likely include sludge containing aluminium waste, which must be disposed of safely. According to the PPM, this impact will be addressed through a process of recirculation (to reuse as much water as possible) and the remaining sludge will be transported to drying ponds and stored in special areas within the grounds of the treatment plant. EPSAS will “evaluate the sludge quality” for other uses. While these ‘other uses’ are not

defined, one common use of sludge is for brick-making or for use in construction. The NCEA notes that brick manufacturing industry in Bolivia is fraught with environmental problems — primarily air pollution resulting from sub-standard kiln use and inappropriate fuel sources — and such a solution would require careful analysis.

The NCEA recommends that the RVO discuss with EPSAS what uses for sludge are acceptable, and under what conditions sludge re-use may take place.

Annex 1: Overview of the PPM–PASA content

The PPM – PASA includes a detailed description of project activities during all project phases. It provides information on exact location, area of influence (including the four raw water reservoirs), main processes, and materials (including natural resources) to be used during construction and operation. The description of the existing environment is extensive.

Following the identification of the impacts, the document presents the Environmental Impact Prevention and Mitigation Programme (the PPM). This uses the tabular information summarised from the impact evaluation chapter (Table 16) and adds additional columns with proposed mitigation measures and methodologies for implementing these. The key mitigation table (Table 25) presents the environment factor affected, the environmental / social impact, the proposed mitigation measure, the methodology for implementing the mitigation measure, and the location / timing. Responsibilities are also assigned, and cost estimates are provided for the mitigation plan.

The Environmental Implementation Monitoring Plan (the PASA) identifies the main ‘aspects’ to be monitored for every impact during each project phase (i.e.: control of particulate matter, control of gaseous emissions, etc) (Table 26). A second table identifies how this information will be verified (i.e.: photographs, registry of maintenance, m³ of material deposited in authorized sites, etc). A third table combines this information by including each impact, the mitigation measure proposed, the impact location, permissible limits (only five are defined for a total of 54 impacts identified to be monitored), monitoring frequency, costs (where these are budgeted), and responsibility.

The PPM–PASA also contains a number of separate action plans, including a:

- Risk analysis and contingency plan: describes the procedures for identifying risk events and defining ‘tolerance levels’ for these and the contingency measures to be applied in case an event occurs. The procedures and measures described in these plans are adequate; the contingency plan in particular is well detailed and clear in the measures to be taken and the assignation on responsibilities.
- Management plan for solid and liquid wastes: This plan provides details on exactly how solid and liquid wastes will be managed. Although the plan is generic, it provides good guidance on waste management that should ensure the effective treatment and disposal of any wastes generated. Note the separate point on re–use of residuals in Section 4.3.
- Security and hygiene plan. Similarly, this plan is generic, but provides the necessary information to address any security and/or hygiene issues that may arise during construction or afterwards, including reporting procedures, guidelines for personal protection including use of personal protection equipment, etc.
- Community relations plan,
- Programme to resolve complaints and claims (grievance mechanism),
- Tree/vegetation management plan.
- Decommissioning and rehabilitation plan.

Annex 2: Description of the impact assessment methodology

The impact assessment methodology in the PPM-PASA is described below:

- An initial table (Table 13) lists the four project phases: (a) implementation (= construction); (b) operation; (c) maintenance; and (d) induced activities (referring to events/circumstances induced as a result of the project). This table is sub-divided into detailed activities for each phase.
- Another table (14) describes the environmental 'factor' (air, water, soil, ecology, noise, socio-economic) and possible impacts for each of these for each of the four phases.
- Table 15 presents a matrix of the detailed activities (from Table 13) linked to the possible environmental impacts identified in Table 14 — this table provides more detail on the links between sub-activities and impacts and is a good starting point for determining environmental management needs.
- Yet another table (16) repeats the analysis from Table 15 in a somewhat different (more user friendly?) format. Table 16 also adds a new element called an 'attribute' (a key word describing what will be impacted, such as labour/employment, landscape, physical systems, vegetation, faecal coliform levels, etc) and provides a simple impact evaluation: negative, positive, direct, indirect, localized or widespread, temporary or permanent, reversible or irreversible.
- This somewhat lengthy and repetitive 'impact identification' process is followed by a very short (two-page) section on *impact prediction*, providing a description of the likely scale of some of the project impacts.
- In the final section on *impact evaluation*, the attributes defined in Table 16 (which are now referred to as impacts) are scored, grouped by project phase (four tables, one for each project phase). This is followed by a half-page general conclusion on key impacts.