Panguna Mine Legacy Impact Assessment

Phase 1 Assessment Report
Chapter 9 – Overarching Approach to Impact Assessment

Panguna Legacy Assessment Company Limited

Reference: 754-MELEN305719_R03

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9. OVERARCHING APPROACH TO IMPACT ASSESSMENT

The impact assessment stage is the fourth of five stages in the Execution Framework for delivery for Phase 1 of the Legacy Impact Assessment. Figure 9.1 shows the stages of delivery, comprising:

- Stage 1: Preliminary works
- Stage 2: Environmental, social and human rights data collection
- Stage 3: Evaluation of environmental, social and human rights data
- Stage 4: Impact assessment
- Stage 5: Reporting.

This chapter describes the overarching approach developed to assess the actual and potential environmental impacts caused by the Panguna Mine since the cessation of mining in 1989, and the social and human rights impacts directly connected to them. Detailed descriptions of the methods used for the environmental, social and human rights impact assessments are provided in their respective chapters, i.e.:

- Chapter 10 – environmental impact assessment
- Chapter 11 – social impact assessment
- Chapter 12 – human rights impact assessment

Each impact assessment is presented by domain for ease of reference for the reader.

The final step in the impact assessment process is to provide recommendations of what human rights impacts need to be remedied. Chapter 13 presents these recommendations.

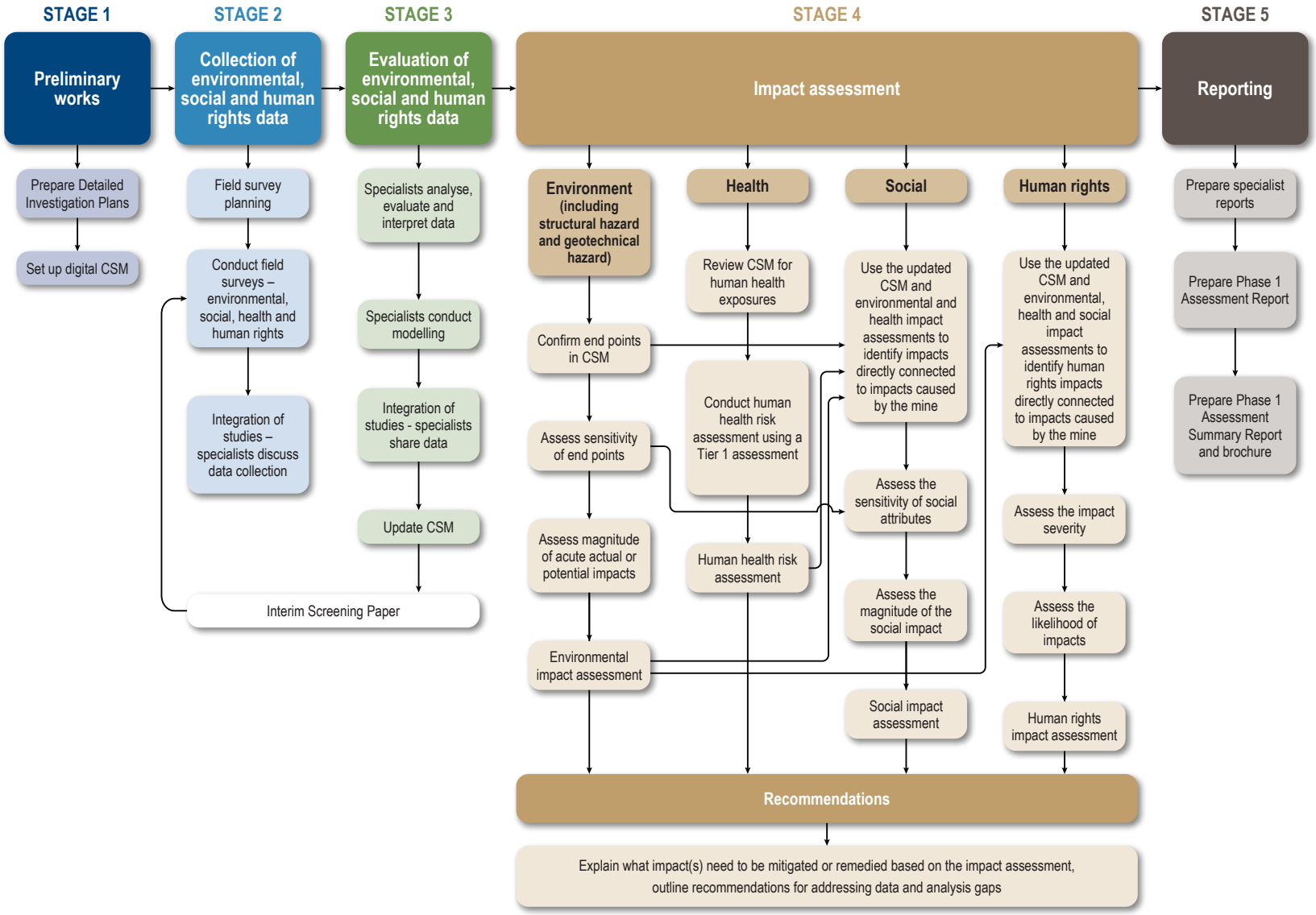
9.1 CONTEXT

The Legacy Impact Assessment is the first large-scale data collection, evaluation and assessment of the environmental, social and human rights impacts of the Panguna Mine since cessation of mining in 1989. Phase 1 is an important step in the Legacy Impact Assessment but it is not the final step and cannot assess every perceived impact nor provide recommendations of what should be done to remedy identified impacts. Further work may follow in Phase 2, which may include assessment of additional impacts not considered during Phase 1 and may also inform recommendations on how to remedy identified impacts. The nature and scope of Phase 2 will be dependent on the outcomes of Phase 1 and further discussion between the Parties to the AusNCP process.

Context related to the impact assessments presented in Volume II, Part B relate to:

- The execution framework
- Definition of actual and potential impacts
- Limitations of the scope of work
- The influence of contributing factors.

While also provided in earlier chapters in Volume II, Part A, the following sections provide a summary of this context to frame the impact assessments and guide the reader.



NOTE
CSM = Conceptual Site Model

SOURCE
Tetra Tech Coffey, 2024

PANGUNA LEGACY ASSESSMENT COMPANY

PANGUNA MINE LEGACY IMPACT ASSESSMENT PHASE 1

FIGURE 9.1

Phase 1 Legacy Impact Assessment approach

TETRA TECH COFFEY

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9.1.1 Execution Framework

In accordance with the Execution Framework outlined in the Scope of Work (see Section 3.4), for an impact requiring assessment to be identified:

- There must be a source caused by the Panguna Mine, e.g., contamination or physical risk.
- There must be an end point, e.g., receiving environment demonstrating an environmental impact or potentially affected communities.
- There must be a complete actual, potential, active or historic pathway between the source and the end point.

All three components of the conceptual site model must be present to indicate an actual or potential impact. Only social and human rights impacts directly connected to an environmental impact caused by the Panguna Mine since 1989 are within scope.

9.1.2 Impact categories

Phase 1 focuses on the most serious known likely actual and potential impact areas for local communities, and the identification of potentially affected communities as identified in the Complaint. In this sense, ‘actual impacts’ means an adverse impact that has occurred, or persisted, since mining ceased in 1989 or is occurring and ‘potential impacts’ means an adverse impact that may occur but has not yet done so. These impact scenarios have been addressed as follows:

- Actual impacts have been addressed where there is evidence of the impact having occurred, or persisted, since mining ceased in 1989, i.e., there is a historic (post 1989) complete pathway between the source and the end point, or the impact is occurring, i.e., there is an active complete pathway between the source and the end point.
- Potential impacts, defined as adverse impacts that may occur but have not yet done so, have been identified by considering predictions of acute environmental impacts caused by the mine since its cessation in 1989 and the social and human rights impacts directly connected to those environmental impacts within a timeframe appropriate to the aspect of analysis and with consideration of the influence of uncertainty on the results.

In addition to these impacts, the social impact assessment and human right impact assessment consider possible impacts and possible human health risks that are directly connected to environmental impacts of the Panguna Mine since 1989. These categories are described as:

- The possible category, which is for those credible social and human rights impacts that could be directly connected to actual environmental impact but there is insufficient information at this time to determine if there is an actual impact.
- Possible human health risk, which is related to potential contaminant exposure. The data collected during Phase 1 identifies where further investigations are needed to determine whether there may be an impact on human health. In this assessment, these have been termed possible human health risks. Importantly, because further investigations are required, it is not possible to apply a significance rating to possible health risks, as the information used to assess the magnitude of an impact is not available.

Due to the preliminary nature of Phase 1 and the high level of uncertainty associated with impacts, these categories have been developed as a departure from the impact scenarios defined in the Scope of Work.

The impact assessments are conservative: where there is uncertainty (see Section 9.3) and assumptions have been made the resulting assessment presents a worse-than rather than better-than expected outcome to inform decision making. Where there is a low likelihood impact scenario that has a high consequence, this has been addressed through a separate, risk-based assessment approach (see Section 9.4).

9.1.3 Limitations

The Primary Contractor Scope of Work limits Phase 1 to:

- Focussing Phase 1 on the acute environmental impacts caused by the Panguna Mine since the cessation of mining in 1989 and the acute social and human rights impacts directly connected to them.
- The overall schedule, including an approximate 12-month period for data collection and 20-month overall duration.
- Limiting investigations to non-intrusive methods.
- Taking a representative sampling approach to survey coverage for communities and the environment.
- Providing for more extensive community engagement to occur in Phase 2.

These have limited the nature and volume of data that informed the impact assessments presented in Volume II, Part B. The focus on acute impacts also limits the breadth of impacts that can be considered during Phase 1.

A typical or standard impact assessment process would involve the establishment of a baseline from which to predict and monitor impacts. The Legacy Impact Assessment process is a midpoint assessment, in that it assesses impacts that have occurred, are ongoing and that are reasonably credible to occur in future. The impact assessments described in this volume use the conceptual site model and data collected during Phase 1 to allow for an impact assessment process that identifies how the current conditions may be a result of the environmental impacts caused by the Panguna Mine since 1989. As stated above, Phase 1 is designed to culminate in recommendations of what acute human rights impacts need to be remedied, not how they are to be remedied. As such, the impact assessment is a ‘pre-mitigation’ impact assessment rather than a residual impact assessment that assesses impacts after the assumed effective implementation of management and mitigation measures.

Section 3.1 provides further detail regarding these limitations.

9.1.4 Contributing factors

There are a range of contributing factors which may influence the environmental, social and human rights impacts. For example, the significant artisanal and small-scale mining activity in the Kawerong and Jaba rivers influences water quality in this river system; for another example, the significant population growth in the study area also influences social aspects such as resource availability. It is beyond the scope of Phase 1 to quantify the relevant contribution from such factors but the impact assessment notes them where they may influence results so that the reader can understand the range of factors which may be contributing to the environmental, social and human rights impacts they perceive or are experiencing.

9.2 OVERARCHING APPROACH

The overarching approach for conducting the integrated impact assessment consists of:

- Description of the existing environmental, social and human health conditions, including the sensitivity of receptors (which also includes sites, environmental and social values and/or resources where relevant).
- Assessment of credible acute actual or potential or possible impacts, and possible human health risks.

Collectively, the environmental, social and human rights impact assessments used a significance approach to provide consistency in method and outputs.

The first step in the impact assessment process is the environmental impact assessment presented in Chapter 10, which establishes the acute environmental impacts caused by the Panguna Mine that have occurred and/or persisted since mining ceased in 1989 or are predicted to occur in future. This is supported

by the assessment of structural and geotechnical hazards completed in the evaluation stage, which assessed the potential safety risks to communities from aging mine-related infrastructure including levees and buildings and geotechnical hazards. Impact significance ratings were determined based on the sensitivity and magnitude of hazards and/or risks. Their definitions and categories are detailed in Section 10.1. Collectively, these define the actual and potential environmental impacts of the mine that were considered in the social and human rights impact assessments, so that these assessments are focussed on the impacts directly connected to the environmental impacts caused by the Panguna Mine since 1989.

The social impact assessment presented in Chapter 11 considers impacts and risks from the environmental and human health studies to identify and characterise social impacts. The social impact assessment considers actual, potential and possible impacts and possible human health risks that are directly connected to environmental impacts of the Panguna Mine since 1989. Impacts raised through the social and human rights characterisation fieldwork were also integrated with the results of the broader assessment, primarily through informing the source-pathway-end point relationship for identified potential impacts. Impact significance ratings were determined based on the sensitivity and magnitude of hazards and/or risks. Their definitions and categories are detailed in Section 11.1. While the social impact assessment in Chapter 11 may acknowledge and report on impacts that are not directly connected to the environmental impacts of the mine, it did not formally assess them as these impacts are outside the scope of Phase 1. The identification of the directly connected impacts in some cases is not clear-cut, and, in these cases, a conservative approach was taken. Chapter 8 in Volume II, Part A provides justification for impacts not carried through to formal assessment.

The human rights impact assessment presented in Chapter 12 was the final step which was informed by the social and human rights characterisation data and the findings of the environmental and social impact assessments. The human rights impact assessment assessed what human rights have been impacted (and for what rights holders) directly connected to mine-related actual or potential environmental or social impacts and uses a salience rating based on severity and likelihood (Section 12.1).

9.3 ACKNOWLEDGING UNCERTAINTY

An uncertainty ranking is provided for each assessed impact based on the available information, level of assumptions, certainty of predictions and confidence in the accuracy of the inputs that produce the significance rating. This inclusion of uncertainty in outputs of the field inspection, data collection and/or modelling activities informs the level of confidence in the conclusions from the impact assessment.

In some instances, specific investigations formally tested the influence of uncertainty, such as the human health risk assessment which involved the evaluation of the adequacy of the data set for each media and community to identify whether the data was sufficient for each community or study area. It also identifies where data gaps were present and where uncertainties in the risk evaluation could be refined through further data or information.

The level of uncertainty associated with each of the assessed impacts has been assigned as high, medium or low:

- High – additional relevant information is needed to adequately assess the impact.
- Medium – there is some information available but additional information is required to assess the impact.
- Low – there is adequate information and evidence to assess the impact.

9.4 ASSESSING POTENTIAL IMPACTS WITH A LOW LIKELIHOOD BUT HIGH CONSEQUENCE

The assessment process for some environmental aspects has identified mine-related hazards that have a low likelihood but potential high consequence. Because of their low likelihood, they would not normally be carried into the environmental, social and human rights impact assessment stage, as this nominally considers impacts with a reasonably credible impact scenario (i.e., the low likelihood means that they are expected to only occur in exceptional circumstances). These low likelihood but potential high consequence risks apply to structural (e.g., building collapse) or geotechnical (e.g., mass pit wall failure) aspects and are therefore potential impacts. Given the level of stakeholder concern regarding these risks, rather than exclude them from the impact assessment process they have been evaluated using a risk assessment framework and are inputs to the main environmental, social and human rights impact assessment. This framework is described for structural and geotechnical hazards in Section 5.4.1 and Section 5.1.3.1, respectively.

In a setting such as Papua New Guinea, the likelihood of such failure is often related to natural hazards such as landslides, severe flooding, earthquakes, and tsunamis. In addition, in the context of Panguna where the effects of the mine have been unmitigated since cessation of mining in 1989, the legacy impacts of the mine may have created a situation where the risks posed by a natural event are greater than would have been the case without the mine. The influence of these natural events on the risk assessment has been identified and quantified where possible.

The social impacts connected to structural hazards (e.g., a building failure) (Section 5.4) and geotechnical hazards (e.g., slope failure or landslide) (Section 5.1.3) are assessed where there is a high or greater risk of failure.

9.5 IMPACTS TO BE MITIGATED OR REMEDIED AND RECOMMENDATIONS FOR FURTHER ANALYSIS

The final stage in the impact assessment process is to provide recommendations of what human rights impacts need to be remedied due the environmental impacts of the Panguna Mine since cessation of mining in 1989.

The recommendations are structured as follows:

- Specifying with clarity the impact that needs to be mitigated or remedied based on the impact assessment.
- Recommending necessary types of analysis needed to determine options to mitigate or remediate the issue, including addressing data and analysis gaps in Phase 1 assessments.