

Corrective Action Plan

Loan 2752
November 2017

ARM: Sustainable Urban Development Investment Program Tranche 1

Shengavit District, Arshakunyats Avenue

Prepared by the Yerevan Municipality for the Asian Development Bank.

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November 2017

Armenia: Sustainable Urban Development Investment Program Tranche 1

(Shengavit District, Arshakunyats Avenue)

Project Number: 42417

Loan Number: L2752

Prepared: October 2017

Prepared by the Yerevan Municipality

Yerevan Project Implementation Unit

ABBREVIATIONS

ADB	Asian Development Bank
AP	Affected Person
AH	Affected Household
AMD	Armenian Dram
GRM	Grievance Redress Mechanism
LAR	Land Acquisition and Resettlement
LARP	Land Acquisition and Resettlement Plan
YM	Municipality of Yerevan
MFF	Multi Tranche Financial Facility
PIU	Project Implementation Unit
RA	Republic of Armenia
ROW	Right of Way
SUDIP	Sustainable Urban Development Investment Program
CAP	Corrective Action Plan
USD	American Dollar

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1. INTRODUCTION

1.1 Project Description

1. The Sustainable Urban Development Investment Program (SUDIP) is financed by the Asian Development Bank (ADB) under a Multi Tranche Financial Facility (MFF) and entails so far two Tranches. The Project under Tranche 1 is divided into 2 subprojects, out of which Subproject 2 with 3.7 km alignment includes the widening of Arshakunyats Avenue, new connection from Artashat Highway to Shirak Street and the widening of the Artashat Highway to Noragavit 1st Street. Construction works were completed in December 2016.

2. The project is classified as category A for involuntary resettlement (IR). The impact of subproject 2 was significant as more than 200 individuals have been affected for which Land Acquisition and Resettlement Plan (LARP 3) has been prepared. It was approved by ADB on May 12, 2014 and by the RA Government on September 11, 2014. The LARP implementation has started in 2014 and was finalized in July 2015. The commencement of construction works for subproject 2 was granted on September 2015. The road has been put into operation in December 2016.

1.2 History and Scope of the Corrective Action Plan

3. An affected person complained to the PIU and ADB before and after the construction works. The AP's main concern was possible impact of the construction on the structural deterioration of the residential house located next to the Project Right of Way due to poor conditions of the structure.

4. The AP's property was out of the Project Right of Way (RoW) as shown in Figure 1 and had not been considered for acquisition under the project LARP. The minimum distance of AP house from the LAR boundary is 7.5m and maximum distance is 9.2m (see Figure 2).

5. The AP claimed that the road construction caused some structural deterioration of his property, and was not happy with proposed mitigation measures. The AP received guidance to present his complaint to the Project Grievance Redress Mechanism and, when not satisfied with the outcome, applied to the Complaint's Receiving Officer in August 2017 and chose the problem solving function.

6. An independent investigation of geotechnical conditions and structural condition of the property was conducted in October 2017, with the objective of determining to what extent, if any, the project construction activities may have contributed to the structural deterioration of the property. The investigation concluded that a degree of unforeseen impact is likely to have been sustained by the property because of construction activities.

7. Had the impact been identified and mitigation measures agreed during the period that the contractor was active and on site, the measures would have been included in the contractor's EMP. However, at this stage, with the works completed, the inclusion of this work in the contractor's defects liability would not provide for a timely solution. It is considered that these works need to be completed as soon as possible, with key foundation works conducted prior to

the onset of winter. The scope of this CAP is to set out the compensation payable to the impacted party, based on the above-mentioned technical investigation, in order that mitigation measures can be carried out immediately.

Figure 1. Location of AP's house in regards to the Project



Figure 2. The distance of APs house from LAR boundary



2. SUMMARY IMPACT ASSESSMENT AND MITIGATION

8. In order to accurately assess the extent of the impact on the AP's house, independent seismic and geotechnical engineers were hired to conduct the following surveys and analysis:

- (i) Review of technical documents, photos, and other available materials on the APs' dwellings previously collected by the Project team, including consultants and contractors, during the pre-construction survey, as well as during and after construction.
- (ii) Measurement of buildings for the purpose of revealing their spatial and planning structural solutions.
- (iii) Detailed visual and instrumental study of the buildings.
- (iv) Assessment of the actual technical state of the buildings in accordance with the requirements of valid RA building codes.
- (v) Analysis of the geotechnical assessment results of the buildings and the soil of the territory around the buildings and the road (physical and mechanical properties and dynamic characteristics of the soil, etc.)

9. The independent experts (structural engineer and geotechnical specialist) identified repairs required by the residential house, support structure and the basement to rectify damage likely to have been sustained as a result of the road construction, to restore the properties to a safe condition:

Residential house: The required works for the restoration and reinforcement of the residential house are:

- (i) *Concrete jacketing:* For strengthening of the wall from the outside, one-sided 60m² reinforced concrete jacketing will be required. The RC jacket should start from the point of the base of footing and continue up to the upper point of the second storey cover.
- (ii) *Thermal insulation:* In order to ensure the thermal insulation of the first storey section of the wall after making RC jacket the 30m² wall should be covered with a

thermal insulation layer from the outside and should be plastered with sand cement mortar.

- (iii) *Hydro insulation:* The foundations of the wall, the base beam and section of the wall that will be lower than the paving (after restoring the paving) should be covered with a waterproof course to protect from moisture.
- (iv) *Open foundation:* To ensure the depth of the freezing zone for the foundation of the wall backfilling should be made from outside. The backfilling with the appropriate width and steepness should be made by the paving, ensuring the removal of the surface water and waters of atmospheric precipitation from the building to exclude the penetration of water into the constructive elements and foundation of the building.
- (v) *Repairing and refinishing of internal cracks:* To inject cement paste into the points of attachment of the longitudinal and transverse walls of the second storey of the residential house, to plaster with drywall from inside in the direction of the cracks and to restore the interior decoration of the walls of the second storey.

Strengthening Support structure: To increase the strength of attachment of the longitudinal and transverse walls of the support structure the points of attachment should be strengthened with double-sided reinforced concrete jacket.

Basement filling: further operation of the basement is dangerous for human life and health (technical state of the basement is emergency (fourth degree)), thus it should be closed up.

3. CAP PROCESS AND BUDGET

10. The cost of the above-mentioned structural repair works has been estimated at 5,971,031.63 AMD (12,388 USD). This amount includes an allowance for contingencies. The compensation cost has been calculated by the Independent Engineer based on the prices mentioned in the construction contracts for the construction of similar type of buildings, structures and construction activity in current market conditions.

All compensation costs of impacts measured and valuated will be covered by the contingency from Tranche 1 LARP 3.

11. The CAP process will be carried out in four steps:

- (i) ADB through the Armenia Resident Mission will procure a design/supervision services in accordance with the recommendations of the independent engineer. (this has already been done)
- (ii) 5,971,031.63 AMD (12,388 USD) compensation payment will be made to the AP upon signing of agreement.
- (iii) The AP will complete the work described in the design in accordance with specifications within one year of payment
- (iv) ADB will support a monitoring process to verify and validate the completion of the works at several stages..

4. IMPLEMENTATION ARRANGEMENT

12. The CAP will be implemented immediately after approval of this CAP by ADB. PIU will sign the contract with the AP for disbursement of compensation. The compensation will be transferred to the AP bank account and the AP will make his own arrangements for the implementation of the repair works. According to the contract, the AP is obliged to spend the provided compensation only for the purpose defined by CAP within 1 year..

13. A structural engineering expert has been appointed by ADB's Armenia Resident Mission to monitor the CAP implementation. The expert will report to ADB and the PIU at each phase of the repair works and will provide a summary report on completion of the process.