May 2016

ARM: North–South Road Corridor Investment Program – Tranche 3
(Annexes 1–4)

Annexes

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Annex. Assessment of possible impacts as a result of the envisaged activity (detailed calculation)
## Annex 1

Rapid Environmental Assessment (REA) Checklist - Roads and Highways

Armenia: North-South Road Corridor Investment Program Tranches 2 & 3 – Environmental Impact Assessment Report

### Instructions:
- This checklist is to be prepared to support the environmental classification of a project. It is to be attached to the environmental categorization form that is to be prepared and submitted to the Chief Compliance Officer of the Regional and Sustainable Development Department.
- This checklist is to be completed with the assistance of an Environment Specialist in a Regional Department.
- This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB checklists and handbooks on (i) involuntary resettlement, (ii) indigenous peoples planning, (iii) poverty reduction, (iv) participation, and (v) gender and development.
- Answer the questions assuming the “without mitigation” case. The purpose is to identify potential impacts. Use the “remarks” section to discuss any anticipated mitigation measures.

### Country/Project Title:
RSC-C00457 (ARM): North-South Road Corridor Investment Program Tranches 2 & 3: Ashtarak – Gyumri highway improvements

### Sector Division:
Roads and Highways

### Conducted by / date:
Arman Vermishyan, Boris Gasparyan, and Klaus Schonfeld, 6 May 2010

### Screening Questions

<table>
<thead>
<tr>
<th>A. PROJECT SITING</th>
<th>Yes</th>
<th>No</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is the Project area adjacent to or within any of the following environmentally sensitive areas?</td>
<td>X</td>
<td></td>
<td>Approximately 21 archaeological sites will be investigated and measures for the maximization of their preservation will be recommended. Numerous modern monuments that have been erected close to the edge of the existing road to commemorate vehicle accident victims are not under the jurisdiction of the MOC, but under the control of the relevant provincial head (marz pet), in this case, Shirak and Aragatzotn. There are no ecological cultural heritage sites. The Agarak site (No. 6 on the map showing all sites) has the status of a historical-cultural preserve and is a special protected area. The recommendation to locate the highway on the opposite side as indicated in the preliminary design will be made in order to minimize the impact of the project on</td>
</tr>
</tbody>
</table>

| 1. Cultural heritage site | X | | |
| 2. Protected area | X | | |
### Annex 1

**Rapid Environmental Assessment (REA) Checklist - Roads and Highways**

**Armenia: North-South Road Corridor Investment Program Tranches 2 & 3 – Environmental Impact Assessment Report**

<table>
<thead>
<tr>
<th>SCREENING QUESTIONS</th>
<th>Yes</th>
<th>No</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Wetland</td>
<td></td>
<td>X</td>
<td>Two small wetlands are located adjacent to the road; however, it will not be affected if routine mitigation measures as set out in EMP are implemented during construction.</td>
</tr>
<tr>
<td>4. Mangrove</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>5. Estuarine</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>6. Buffer zone of protected area</td>
<td></td>
<td>X</td>
<td>All 21 cultural heritage sites have their own buffer zones of physical protection and zones of surrounding landscape protection as set out in the Law of preservation of immovable monuments. There are no ecological buffer zones.</td>
</tr>
<tr>
<td>7. Special area for protecting biodiversity</td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

### B. POTENTIAL ENVIRONMENTAL IMPACTS

**Will the Project cause…**

1. Encroachment on historical/cultural areas; disfiguration of landscape by road embankments, cuts, fills, and quarries?  
   - **Yes**  
   - **No**  
   - **Remarks**: The existing road encroaches on several archaeological sites without apparent regard for their importance. This project will include measures, satisfactory to the Ministry of Culture, to adequately explore the sites and close them. These measures will be described in the IEE/EIA, disclosed during public consultations, and specified in the EMP. There are no obvious areas where additional embankments required for the additional lanes will disfigure the landscape any more than the existing embankments. Potential impacts during construction will be routinely mitigated as set out in EMP.

2. Encroachment on precious ecology (e.g. Sensitive or protected areas)?  
   - **Yes**  
   - **No**  

3. Alteration of surface water hydrology of waterways crossed by roads, resulting in increased sediment in streams affected by increased soil erosion at construction site?  
   - **Yes**  
   - **No**  
   - **Remarks**: Routine mitigation during construction as set out in EMP.

4. Deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and  
   - **Yes**  
   - **No**  
   - **Remarks**: Routine mitigation during construction as set out in EMP.
### Annex 1

**Rapid Environmental Assessment (REA) Checklist - Roads and Highways**

Armenia: North-South Road Corridor Investment Program Tranches 2 & 3 – Environmental Impact Assessment Report

<table>
<thead>
<tr>
<th>SCREENING QUESTIONS</th>
<th>Yes</th>
<th>No</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Increased local air pollution due to rock crushing, cutting and filling works, and chemicals from asphalt processing?</td>
<td>X</td>
<td></td>
<td>Routine mitigation during construction as set out in EMP.</td>
</tr>
<tr>
<td>6. Noise and vibration due to blasting and other civil works?</td>
<td>X</td>
<td></td>
<td>Routine mitigation during construction as set out in EMP.</td>
</tr>
<tr>
<td>7. Dislocation or involuntary resettlement of people</td>
<td></td>
<td></td>
<td>Refer to Land Acquisition and Resettlement Plan (LARP).</td>
</tr>
<tr>
<td>8. Other social concerns relating to inconveniences in living conditions in the project areas that may trigger cases of upper respiratory problems and stress?</td>
<td>X</td>
<td></td>
<td>Generation of dust, which is a normal occurrence during road construction, will be minimized through routine mitigation measures as set out in EMP.</td>
</tr>
<tr>
<td>9. Hazardous driving conditions where construction interferes with pre-existing roads?</td>
<td>X</td>
<td></td>
<td>Routine mitigation during construction as set out in EMP.</td>
</tr>
<tr>
<td>10. Poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from workers to local populations?</td>
<td>X</td>
<td></td>
<td>Routine mitigation during construction as set out in EMP.</td>
</tr>
<tr>
<td>11. Creation of temporary breeding habitats for mosquito vectors of disease?</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Accident risks associated with increased vehicular traffic, leading to accidental spills of toxic materials and loss of life?</td>
<td>X</td>
<td></td>
<td>While improved roads are expected to result in increased traffic volumes, better alignment, surfacing, and signage, are expected to result in overall decrease of accidents.</td>
</tr>
<tr>
<td>14. Increased noise and air pollution resulting from traffic volume?</td>
<td>X</td>
<td></td>
<td>While improved roads are expected to result in increased traffic volumes, better alignment, surfacing, and signage, together with more efficient and better maintained vehicles are expected to result in overall decrease of noise and air pollution.</td>
</tr>
<tr>
<td>15. Increased risk of water pollution from oil, grease and fuel spills, and other materials from vehicles using the road?</td>
<td>X</td>
<td></td>
<td>While improved roads are expected to result in increased traffic volumes, better alignment, surfacing, and signage, together with more diligent inspections and monitoring by the MOTC are expected to result in overall decrease of accidental spills.</td>
</tr>
</tbody>
</table>
Annex 2  Environmental Report in Support of EIA

For ADB-funded North-South Road Corridor Investment Program, Tranche 3 (Talin - Gyumri)

[20.06.2011]
Armine Yedigaryan
Egis International
Local Environmental Expert
E-mail: aedigaryan@yahoo.co.uk
Tel: +374 91 727245

RA Government, with funding from ADB, is implementing the North-South Road Corridor Investment Program aimed at improvement of the transportation links with its neighbor countries Iran and Georgia to international standards.

The Tranche 3 project consists of upgrading about 47 km 2-lane road from Talin to Gyumri to a 4-lane divided highway.

According to ADB’s Safeguard Policy Statement (2009), constructing a highway on new alignment usually classifies the project as environment category “A”, which requires that an Environmental Impact Assessment (EIA) report is developed and posted on the ADB website for at least 120 days prior to Board Consideration. This project is considered as environment category “A”. According to RA law on EIA this project should also be reviewed by State Environmental Expertise SNCO under the RA Ministry of Nature Protection and respective conclusion should be issued prior to commencement of civil works.

Egis-Bceom International consulting organization should develop final design for Tranche 3 and respectively update the EIA. EgisBceom International consulting organization’s environmental team consisted of one international environmental consultant and two national experts (environmentalist and archaeologist), should review and update the EIA report in accordance with ADB’s Safeguard Policy Statement (June 2009), prepare the final EIA report in accordance with ADB’s manuals/guidelines and legislation of the Republic of Armenia, assist the PMU in actions for getting approvals for the EIA and EMP (conclusion from Environmental Expertise SNCO under the RA Ministry of Nature Protection, agreement on route with the RA Ministry of Culture, etc.).

Within the context of EIA procedure for the project, the main goals of investigations are:

- identification of environmental values of areas along the highway,
- assessment of potential impacts of road construction on environment,
- update Environmental Management Plan (EMP) to reflect final detail design.
This report is based on field investigations carried out in October and November, 2010 and desk review of available literature.

During the site visits all environmental, archaeological, historical and cultural sites located along the proposed alignment (including those likely to be impacted during the Project) were investigated. Summarizing the findings of site visits and literature review, the following environmental “Hot Spots” are emphasized (during development of the final detail design special attention is given to them and appropriate mitigation measures are included in EMP):

The reservoir north of Talin is situated on the left site of the Talin – Gyumri highway, just after Talin city. The reservoir is used for watering of cattle and is therefore important to the local population. It is about 140 m from the highway. New alignment passes through right side of existing road. It may be impacted during construction. The environmental management and monitoring plan (EMP) should include special mitigation measures to protect the reservoir from construction-related impacts.

Pond near Town Maralik (Shirak Province)

This artificial water storage pond for cattle watering with approximate size 40m x 80m is situated near the highway close to the Town of Maralik in Shirak Province. No submerged and floating aquatic vegetation were found and no conditions for waterfowl were evident. Special ecological values were also not evident.

Caution is recommended during construction to avoid contaminating the pond. Appropriate mitigation measures should be included in EMP.
Natural monument “Turtle”

This is a natural rock formation, or sculpture, in the shape of a turtle. Natural monuments are rare in Shirak marz so that this “sculpture” has become one of the loveliest places for locals and visitors alike to gather and contemplate a legend that is ascribed to it. This natural rock monument is included in the MNP’s list of Natural Monuments of Armenia (Governmental Decision 967 N, 14 Aug 2008) which is in the list of the protected natural monuments of Armenia.

According to design new road alignment pass through right side of existing road and during construction there will be implemented huge volume of earth works. So, during construction the impact on the natural monument will be a minimum. Appropriate mitigation measures will be included in EMP.

Investigation of Flora and Fauna along the Talin - Gyumri highway

The Talin - Gyumri highway pass through steppe landscape zones. Main plant formations are Stipae – Festucae, Bromusae – Festucace, Agropuron, Bothriochloa bush and tragacanth types. All botanic formations widespread along the highway used as spring and autumn grasslands.

During investigations it was clarified that there are endangered Flora and Fauna Red Book species observed in this region. Species in those areas should receive special attention to comply with Armenia’s Law on Flora (1999), Law on Fauna (2000) and the requirements of the Red Book for Flora (Governmental decree 29.01.2010, N 72-N), Red Book for Fauna (Governmental decree 29.01.2010, N 71-N).

Flora

There are three Red Book species near the highway.
• **Allium oltense Grossh - EN** – A taxon is endangered when it is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future.

  Habitat: Mastara, Lanjik.

  Limiting factors: Limited territory for living and spreading; loss of habitat and degradation as a result of land cultivation and grazing.

• **Merendera greuteri Gabrielian - CR** - A taxon is Critically Endangered when it is facing an extremely high risk of extinction in the wild in the immediate future. It is Armenian endemic. It is found only in Shirak floristic region. The territory of its living and spreading is less than 10 sq. km.

  Habitat: Between Katnakhbyur and Talin communities.

  Limiting factors: Limited territory for living and spreading; loss of habitat and degradation as a result of land cultivation.

• **Alcea sophora Iiin- EN** – A taxon is endangered when it is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future.

  Habitat: Maralik, Talin, Mastara.

  Limiting factors: Limited territory for living and spreading; loss of habitat and degradation as a result of land cultivation and irregular grazing.
The Special mitigation measures should be included in the EMP to minimize the negative impact on flora and to avoid any detrimental effect to Red Book plants.

The Contractor should engage a botanist to survey the territory to be impacted by construction activities, report on the location and number of Red Book flora species, and propose methods to prevent or achieve minimal loss of biodiversity, including the replanting of those species in suitable locations, being mindful of appropriate soil conditions. The Red book flora species posters likely to be found in various areas of the project should be installed in work camps, etc.

**Trees along the highway**

There are several sections where trees and bushes are growing along the highway (about 30 m in the km 81+300, about 1.2 km rare trees line in Maralik community from km 99+150 till km 100+350, about 1 km thick trees line from km 111+500 till km 112+500, two group of trees in the km 113+600 and from
km 116+450 till km 116+500, about 1.8 km thick trees line near Gyumri from km 116+750 till km 118+500).

Among these trees are registered: *Populus, Robinia, Acer, Salix, Morus, Armeniaca, Crataegus, Pyrus salicifolia, Berberis, Fraxinus excelsior, F. oxycarpa, Spiraea crenata, Berberis orientalis, Cotoneaster integerrima, Lonicera iberica, Ephedra procera, Jasminum fruticans, Ulmus, Prunus, Elaeagnus, Paliurus, Rosa.*

Taking into account that trees and bushes planted along the highway have some important advantages, such as providing environmental and aesthetic value, protecting from wind and snow accumulation, serving also as a noise barriers, making visible the direction of road, and taking also into consideration that the highway is passing through steppe zone and that it is relatively difficult to grow trees in this environment, it is necessary to avoid as much as possible cutting of trees and bushes.

In some sections it will be necessary to cut trees, mainly growing in the right side of the existing road (approximately 600-800 trees).

Mitigation measures are involved in EMP. During the construction works new trees should be planted with a ratio of 10 new trees per 1 tree cut in the similar communities administrative area. The new trees should be maintained for 3 years until they become viable (Note: 80% survival is considered excellent). It is very important to use dry and dust persistent local species.

**Fauna**

In this region among widely spread species we can find: mammals - hare (*Lepus europaeus*), fox (*Vulpes vulpes*), wolf (*Canis lupus*) and a number of representatives of rodents - meadow mouse (*M. subterraneus*), marten (*Martes foina*) and others. Amphibians and reptiles are represented by different species of toads, frogs, lizards and snakes.

<table>
<thead>
<tr>
<th>N</th>
<th>English name</th>
<th>Latin name</th>
<th>IUCN categories</th>
<th>Other</th>
<th>Distribution area</th>
<th>Breeding</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Invertebrates</strong></td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td><strong>Insects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Van Brike Bluet</td>
<td>Coenagrion vanbrinkae Lohmann, 1993</td>
<td>VU B1a+B2a</td>
<td>Near Gyumri city</td>
<td>end of May-mid July</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Armenian Grasshopper</td>
<td>Gomphocerus armeniacus (Uvarov, 1931)</td>
<td>VU B 1a +B 2a</td>
<td>Vardaghbyur, Hajur, Artik, Pokrashen,</td>
<td>Mid June - August</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Dutch Alcon Blue</td>
<td>Lithurge fuscipenne Lepeletier, 1841</td>
<td>VU B 1a+B 2a</td>
<td>Near Gyumri city</td>
<td>July-August</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Daghestan bumblebee</td>
<td>Bombus daghestanicus Radoszkowsky, 1888</td>
<td>VU B1a+B2a</td>
<td>Near Gyumri city</td>
<td>July-September</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Vertebrate animals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Reptiles</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Dwarf Lizard</td>
<td>Parvilacerta parva Boulenger, 1887</td>
<td>CR A2ac</td>
<td>Near Lanjik</td>
<td>Twice- end of June, beginning of July and end of July, beginning of August</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Dahl Lizard</td>
<td>Darevskia dahli (Darevsky, 1957)</td>
<td>EN B1a+2a</td>
<td>In Northern Armenia and South Georgia, by river Kura valley foothills in the North.</td>
<td>Beginning of June -Mid July</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Unisexual Lizard</td>
<td>Darevskia unisexualis (Darevsky, 1966)</td>
<td>VU B1a</td>
<td>Northern and Central regions of</td>
<td>End of June-</td>
<td></td>
</tr>
</tbody>
</table>

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### Armenia

#### Armenian Steppe Viper

- **Species:** Vipera (Pelias) eriwanensis (Reuss, 1933)
- **Status:** VU B1ab(iii, v)
- **Habitat:** Can be found in the Northwest Regions of the republic, mainly in mountain landscapes and alpine: 1200-3000 m above the sea level.
- **Breeding:** Breeding in April-May, the cubs are born in late July - mid-September

#### Birds

1. **Egyptian vulture**
   - **Species:** Neophron percnopterus Linnaeus, 1758
   - **Status:** EN A2bcd+3bcd+4bcd
   - **Habitat:** The whole area of Armenia

2. **Eurasian Griffon Vulture**
   - **Species:** Gyps fulvus (Hablizl, 1783)
   - **Status:** VU D1
   - **Habitat:** The whole area of Armenia

3. **Greater spotted eagle**
   - **Species:** Aquila clanga Pallas, 1811
   - **Status:** VU C2a(ii)
   - **Habitat:** Can be found in mountain foothills, mostly in the northern part of the republic

4. **Steppe eagle**
   - **Species:** Aquila nipalensis orientalis Hodgson, 1833
   - **Status:** VU C2a(i); D1
   - **Habitat:** Occurs in the steppe zone of Armenia

5. **Golden eagle**
   - **Species:** Aquila chrysaetos (Linnaeus, 1758)
   - **Status:** VU D0
   - **Habitat:** Occurs in the steppe zone of Armenia

6. **Eurasian eagle - owl**
   - **Species:** Bubo bubo (Linnaeus, 1758)
   - **Status:** VU B1a; C2a(i); D1
   - **Habitat:** Almost everywhere in Armenia

7. **Eurasian roller**
   - **Species:** Coracias garrulus (Linnaeus, 1758)
   - **Status:** VU B1ab(iii)
   - **Habitat:** Can be found in semi-desert and mountain grasslands

#### Mammals

1. **Asia Minor Ground Spermophilus xanthoprymnus Bennet 1835**
   - **Status:** EN B2ab (ii, iii, iv)
   - **Habitat:** Settled mainly in Western and North-Western regions of Armenia. Aragatsotn, Shirak and Lori south Western deforested areas
   - **End of Winter:** May

2. **Schidlovsky Pine Vole**
   - **Species:** Microtus (Sumeriomys) schidlovskii Argyropulo, 1933
   - **Status:** EN B1ab (ii, iii, v)
   - **Habitat:** Western and Northern Parts of Aragatsotn, southern part of Shirak marz, western and central parts of Pambak mountain range, 1400-1700 above the sea level
   - **End of February:** End of February-beginning of April

3. **European Marbled Vormela peregusna (Guldenstaedt, 1770)**
   - **Status:** VU A2c+B1 b(iii)
   - **Habitat:** Almost all the regions of Armenia -2000 above the sea level
   - **End of Winter:** April-May

4. **Polecat**
   - **Species:** Lutra lutra meridionalis
   - **Status:** EN D
   - **Habitat:** Almost all regions of Armenia
   - **End of Winter:** Winter-Spring

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The project can negatively affect fauna by:

- Destroying nesting places, burrows and holes of animals;
- Killing animals during construction;
- Making difficulties for their hunting, migrating and reproduction;
- Creating shocking circumstances by noise, vibration, and air and water pollution.

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3 Endemic subtype
During field visits the locations of possible migration routes were investigated. About 12 possible areas for animal migration passages installation for crossing the road were revealed (km 74+500, 79+200 (livestock passageway), 80+800, 81+500, 82+200, 83+300, 85+100, 87+300 (livestock passageway), 89+500, 92+500, 102+300, 110+700).

The chainage of some elements of drainage system (culverts, box culverts) coincides with possible locations of migration passages (km 71+832, 80+310, 94+025, 102+282, etc.), so the drainage system to be installed in that areas will also serve as passage to ensure safe migration, hunting, nesting, etc. of animals.

To prevent and mitigate possible negative impacts on fauna it is important to include the following mitigation measures in EMP:

- if Red Book plant and/or nesting places, burrows, and holes of animals are discovered, respective information should be provided to PMU environmental specialist and MNP for future actions;
- during construction temporary protective walls should be erected on the sections where animals often appear;
- using equipments with low noise, vibration and with less exhaustions;
- in the case of an injured animal is found the MNP should be contacted;
- avoid construction and blasting works on evening and night time, during animal’s reproduction period, etc.
The North-South Road Corridor Investment Programme
Tranche 3

Archaeological Impact Assessment Report – Part 1

Dr. Mkrtich. H. Zardaryan
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Institute of Archaeology and Ethnography
National Academy of Sciences, RA
Archaeological Consultant of the Programme

Main list of the historical-archaeological and cultural monuments
recorded along the Ashtarak-Gyumri Highway

(Talin – Gyumri segment)\(^4\)

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\(^4\)The “Zero” point mentioned in our Reports #1, 2 and 3 (Tranches 2, 3) = 30+080 of the General Map of the Constructors.
A. Archaeological sites of direct impact

32. Talin tomb field ( # 38 in GM and Map 10)

Aragatsotn marz, Talin community
Distance in correspondence to the “0 point” of the road:  40.800 – 44.900 km
GPS coordinates: N 40°, 24’, 03, 0” ; E 43°, 53’, 30, 7”
State List of Historical-Archaeological Monuments: # 2.3.3.

The site is represented by a large tomb field (necropolis), occupying an area from the N-NE suburbs of Talin and then continuing East along the acting Ashtarak-Gyumri Road. The burials are concentrated by separate groups between the ameliorated agricultural fields. During the salvage excavations, conducted here since 1985 because of urban needs of Talin, around 90 separate tombs were examined. Most of the tomb structures belong to the Early Bronze Age and Late Bronze - Early Iron Ages (IV – I Millennia B.C.), with outstanding remains of the specific material culture. But, the numbers of tombs are still unexcavated. They are mostly visible on the both sides of the existing Ashtarak-Gyumri Road. The suggested design of the highway is directly affecting the burials spread on the left and right sides of the highway, especially directly after the city of Talin (after the eastern cloverleaf entrance to the community). The only way to save the cultural and historical significance of the site is to organize excavations of these tombs and then after start the construction activities.

The unexcavated portions of the site, remaining out of the area of constructional activities, must be protected by the whole complex of mitigation measures mentioned in the Part 1 & 2 of our Report. In general, the site is making strong influence on the coast and the duration of the Project.

Selected publications related to the site:

33. **Yeghnasar tomb field** (# 39 in GM and Map 12)

Aragatsotn marz, Talin-Akounk-Mastara communities  
Distance in correspondence to the “0 point” of the road: 45.650 – 46.600 km  
GPS coordinates: N 40°, 25’, 02, 0” ; E 43°, 51’, 26, 8”

*Site is discovered newly.* 1

The site is represented by groups of burials located along the both sides of the existing Ashtarak-Gyumri Road, between the agricultural fields. The site of Yeghnasar, in fact is the continuation to the North of the Talin tomb field and is not studied yet. Due to the field investigations the better preserved south-eastern part of the tomb field will not be directly affected by the future construction activities of the highway. The only object which is directly endangered is a large and well preserved Bronze - Iron Age burial mound on the left side of the existing highway (at the point of 46.550 km). The way to protect the cultural and historical significance of the burial is to conduct excavations and after remove and reconstruct it at the other place, closer to the highway, if it will represent an important architectural and archaeological characteristics.
It is more than possible to have the discoveries of other burials in the vicinity (some internal signs of burial constructions, like parts of cromlechs are visible in nearby fields). That's why it is necessary to suggest the mitigation measures for the site, mentioned in our Reports 1 and 2. During the road construction chance-find regulations issued by the Ministry of Culture are strictly observed, because openings or discoveries of tombs during the soil removal are also possible. The construction contract should include provision of suitably qualified archaeological stuff, to ensure, that proper chance-find procedures are implemented.

References: None

Map 12. Physical boundaries of Yeghnasar tomb field in relationship with the new design of the Ashtarak-Gyumri Highway

34. Mastara archaeological complex (#42 in GM, Map 13 and 14)

Aragatsotn marz, Mastara community
Distance in correspondence to the “0 point” of the road: 50.000 – 51.900 km
GPS coordinates: N 40°, 26’, 53, 8” ; E 43°, 51’, 53, 8”
Site is newly discovered, 2
This newly discovered site consists of series of settlements and tomb fields dating back to the III Millennium B.C. (Early Bronze Age), as well as the fortification structures and dwellings of the Classical period (VI century B.C – IV century A.D.), continuing on the distance of 4,5 km. The cultural remains collected from the surface of the site are extremely rich for both periods, and even include an Early Bronze Age clay figurine. The Classical remnants (architecture, pottery etc.) are characteristic for an urban type of settlement. According to the size of the dwellings of this period, these suppose be a large city-type settlement, which was established on the trade root, linking the synchronous settlements of Agarak, Talin and Benyamin. The traces of this ancient road are visible in the north-western side of the settlement. The Early Bronze Age complex also seems to be an important settlement for this period, with the dwelling areas, temples and burials.

The site, mainly its northern side was partly destroyed during construction of the Ashtarak-Gyumri Road in 1980-ies. The southern part of the site carries lots of damage by field activities and the road connecting the Mastara and Zarinja communities. Constructions of the Early Bronze Age period are hafted by the existing highway and are poorly preserved on the right side on the slope of the hill. The suggested design of the highway is strongly affecting the site (especially it is overpass the best preserved part of the site belonging to the Early Bronze Age period).

For protection of the site from strong damage the redesign of this part of road is required. It would be necessary to widen the new highway using only the area on the right side of the existing road. In this case the excavations to be conducted in the areas of the new highway line will come up to minimum and case small damage to the cultural remains and constructions. However, Mastara archaeological complex is the second serious archaeological barrier for the construction of the new Ashtarak-Gyumri Highway, which will require both, change of the design and excavations together.

In general, the site isn’t making too strong influence on the coast and the duration of the Project.
References: None

Map 13. Physical boundaries of Mastara archaeological complex in relationship with the new design of the Ashtarak-Gyumri Highway

Early Bronze Age settlement constructions of the Mastara Archaeological complex attached directly to the left side of the existing Ashtarak-Gyumri Road
Walls of the settlement of Classical period of the Mastara archaeological complex on the left side of the existing Ashtarak-Gyumri Road.

Map 14. Aerial photograph of the northern edge of the Mastara Archaeological Complex (red dots) and the area of the archaeological excavations on the right side of the existing Road (yellow dotted triangles).
35. Mastara-2 tomb field (# 45 in GM and Map 15)
Aragatsotn marz, Mastara community
Distance in correspondence to the “0 point” of the road: 51.950 – 54.150 km
GPS coordinates: N 40°, 27’, 40, 3”; E 43°, 51’, 34, 6”
Site is discovered newly. 3

The site is represented by groups of burials spreading further to the North, which might be the continuation of the Mastara archaeological complex i.e. the cemeteries belonging to the inhabitants of the Early Bronze Age and Hellenistic period described above (see # 34). Some concentrations of III-I Millennia B.C. burial mounds are visible attached to the existing Road, as well in the areas of suggested new Highway. The task of protection for this site from destruction can be solved by series of excavations carried out at the portions where the new design of the road is directly affecting the tombs. There is no need for redesigning the road in this area. Protection of the cultural and historical value for this site is extremely important, because it will contain lots of information about the local populations of the mentioned periods and yield information about their social structure, ethnicity, burial and religious customs etc.

The unexcavated portions of the site must be protected by the whole complex of mitigation measures (see the recommendations in our Reports #1-2). In addition, it is important to mention that during the road construction activities chance-find regulations issued by the Ministry of Culture are strictly observed, because openings or discoveries of tombs during the soil removal are possible. The construction contract should include provision of suitably qualified stuff, such as an archaeologist, to ensure, that proper chance-find procedures are implemented. In general, the site is making influence on the coast and the duration of the Project.

References: None
Map 15. Physical boundaries of Mastara-2 tomb field in relationship with the new design of the Ashtarak-Gyumri Highway

Main view of the Mastara-2 tomb field on the left side of the Ashtarak-Gyumri highway at the place where the new highway construction is planned
36. **Lanjik archaeological complex** (# 52 in GM and Map 16)

Aragatsotn and Shirak marzes, territory of Mastara – Lanjik - Sarnaghbyur communities

Distance in correspondence to the “0 point” of the road: 56.500 – 60.400 km

GPS coordinates: N 40°, 29’, 38, 3’’ ; E 43°, 52’, 05, 4’’

State List of Historical-Archaeological Monuments: **# 7.44.1-3**

The site of Lanjik is one of the biggest archeological complexes existing along the acting Ashtarak-Gyumri Road. It consists of series of Prehistoric fortresses and fortified settlements (III - I Millennia B.C.), tomb fields of Classical through Medieval periods, circular structures, medieval village remains (5-17 centuries A.D.), spread around 4 kilometers in length. Small scale excavations conducted here in 1992 discovered cultural remains of Early Bronze Age and Iron Age periods. During the survey of the area of this complex in 1998 the cultural remains of Classical and Medieval periods were collected from the surface as well. The existing Ashtarak-Gyumri Road is passing through the site. During the field investigations of the latter some areas and objects of direct influence of the construction activities were noticed:

- **the single courgans** (burial mounds) located closer to the new line of the Highway need the detailed archaeological investigations,
- **the medieval boundary stone** (or mile stone), which can be re-established on the closest and safe point under control of an archaeologist, or removed to the ShirakRegionalMuseum.

For rest of the site during the road construction activities chance-find regulations issued by the Ministry of Culture are strictly observed, because openings or discoveries of tombs during the soil removal are possible. The construction contract should include provision of qualified archaeological stuff, to ensure, that proper chance-find procedures are implemented. Whole area of the site must be protected by full complex of mitigation measures (see the recommendations in our Reports # 1-2).

In general, the site is not making strong influence on the cost and the duration of the Project.
Selected publications related to the site:

Map 16. Protection area of Lanjik archaeological complex in relationship with the new design of the Ashtarak-Gyumri Highway
Main view of the III-I Millennia B.C. fortified settlement of the Lanjik archaeological complex on the left side of the existing Ashtarak-Gyumri Road.

Circular structure in Lanjik archaeological complex on the right side of the existing Ashtarak-Gyumri Road.
Medieval boundary stone in Lanjik archaeological complex on the left side of the existing Ashtarak-Gyumri Road.

37; **Settlement and tomb field in Lanjik** (# 56 in GM and Map 17)
Shirak marz, Lanjik - Sarnaghbyur communities
Distance in correspondence to the “0 point” of the road: 61.600 – 62.400 km
GPS coordinates: N 40°, 31’, 57, 8”; E 43°, 52’, 34, 6”
Site is discovered newly. 4

The site is represented by a settlement and tomb field dating back to the Early Bronze Age (IV-III Millennia B.C.). Small scale excavations at the site in 1992 opened a tomb belonging to the mentioned period. Field investigations carried out in this area showed that the site is heavily damaged by the existing Ashtarak-Gyumri Road, which hafted the site into two parts. The site is also damaged by intensive agricultural activities as well. The edges of the site overlooking the both sides of the highway lost their scientific and cultural
value, that’s why no special archeological excavations are required to protect the site from the direct influence of the future constructional activities. In the case of this monument chance-find regulations issued by the Ministry of Culture are strictly observed, because openings or discoveries of tombs or other constructions during the soil removal are possible.

The construction contract should include provision of suitably qualified staff, such as an archaeologist, to ensure, that proper chance-find procedures are implemented. As well, the whole area of the site must be protected by full complex of mitigation measures (see the recommendations in our Reports # 1-2). In general the site is making no significant influence on the coast and the duration of the Project.

Selected publications related to the site:

Map 17. Physical boundaries of settlement and tomb field of Lanjik in relationship with the new design of the Ashtarak-Gyumri Highway
Main view of the settlement and tomb field of Lanjik on the right side of the existing Ashtarak-Gyumri Road.

Main view of the settlement and tomb field of Lanjik on the left side of the existing Ashtarak-Gyumri Road.
38. **Fortified settlement and tomb field of Dzorakap** (# 58 in GM and Map 18)

Shirak marz, Dzorakap community

Distance in correspondence to the “0 point” of the road: 66.700 – 67.050 km

GPS coordinates: N 40°, 34’, 01, 6’’; E 43°, 53’, 09, 5’’

State List of Historical-Archaeological Monuments: # 7.73.7

The site consists of II – I Millennia B.C. fortified settlement together with its tomb field and a medieval village remains. Existing Ashtarak-Gyumri Road, passing though this area, cased a serious damage to the site. On the right side of the road, traces of partly destroyed tombs and wall constructions are visible. Pottery fragments and bones, documented along the sections of the existing Road, are showing the presence of the archaeological deposits all along the protection area of the site. The left side attached to the Road is completely destroyed by a powerful soil base, filled for the highway construction.

The suggested design of the new Highway is passing on the right side of the existing Road. It will cause a strong damage to the tombs and constructions. For this reason archaeological excavations along the existing highway on the full length of the site (around 400 meters) are required. This is the only way to protect the cultural and historical value of this portion of the Dzorakap archaeological site. For rest of the site full complex of mitigation measures (see the recommendations in our Reports # 1-2) are required. In general, the site is making strong influence on the coast and the duration of the Project.

**References:** None
Map 18. Protection area of fortified settlement and tomb field of Dzorakap in relationship with the new design of the Ashtarak-Gyumri Highway

Traces of constructions of fortified settlement and tomb field of Dzorakap on the right side of the existing Ashtarak-Gyumri Road.
Traces of constructions of fortified settlement and tomb field of Dzorakap on the left side of the existing Ashtarak-Gyumri Road.

39. Tomb field and Medieval village remains of Hayrenyats (# 62 in GM and Map 19)
Shirak marz, territory of Hayrenyats and Horom communities
Distance in correspondence to the “0 point” of the road: 75,000 – 75,900 km
GPS coordinates: N 40°, 38’, 16, 8’’; E 43°, 51’, 06, 6”
Site is newly discovered. 5

The site is represented by series of Bronze through Iron Age (II – I Millennia B.C.) tombs and remains of medieval village (13-14 centuries) occupying almost the same area. It is located on the left side of the existing Ashtarak-Gyumri Road, in front (West) of the Hayrenyats community. Thick bases of the accurately built walls and other constructions are visible at the place.

Suggested design of the new Highway is passing by the right side of the site and will cause no direct damage to it. The area of the site mainly will be affected by the “cloverleaf” which is planned for connecting the highway with the Hayrenyats community. Changing the position of the “cloverleaf” and removing it to the right side of the highway is required. This will fully save the
site from any direct affect from the constructional activities. In this case, only full complex of mitigation measures (see the recommendations in our Reports # 1-2) are required for protection of the site, making no significant influence on the coast and the duration of the Project.

References: None

View of the Medieval village remains of Hayrenyats on the left side of the existing Ashtarak-Gyumri Road, closer to the area of the cloverleaf joining the highway with the community
Map 19. Physical boundaries of tomb field and medieval village remain of Hayrenyats in relationship with the new design of the Ashtarak-Gyumri Highway

Traces of wall constructions in the area of Medieval village remains of Hayrenyats

40. **Benyamin archaeological complex** (# 67 in GM, Map 20 and 21)
Shirak marz, Benyamin community
Distance in correspondence to the “0 point” of the road: 80.800 – 81.800 km
GPS coordinates: N 40°, 41’, 22, 3” ; E 43°, 50’, 24, 2”
State List of Historical-Archaeological Monuments: # 7.27.9.

The site of Benyamin occupies an area of more than 100 hectares, 15 km to the South from Gyumri, West from the village of Benyamin, dating back to the VI century B.C. to the III century A.D. The site was discovered in 1989 by the joint archaeological expedition of the Institute of Archaeology and Ethnography of the NAS, RA and the Shirak Regional Museum. The excavations here were continued by the joint Armenian-French archaeological expedition, with the support of the Ministry of Culture of France. During already two decades of explorations a territory over 4000 square meters had been excavated. A palace, religious and residential buildings, economic complexes, as well as over 240 burials have been unearthed. During the Classical period it has been a royal residence and it is considered to be the famous town of Drashkanakert (according Dr. F. Ter-Martirosov), the location of which was not known before. The unearthed architectural structures and rich archaeological materials are illustrated the commonalities of the development of Classical culture in Shirak region of Armenia, the cultural and economic ties with the Achaemenid, Hellenistic and Roman cultures of the Near East and Mediterranean, as well as with nomads of the North Caucasus. From this point of view the monument has an international importance.

Suggested design of the road is directly affecting the site from the right side of the existing Road, which is cutting it into two sides and running through the protection area of the complex. Another problem related to the suggested design is the “cloverleaf” for the entrance to the territory of the Benyamin community.
Map 20. Protection area of Benyamin archaeological complex in relationship with the new design of the Ashtarak-Gyumri Highway

Main view of Benyamin archaeological complex from the North-East, hafted by the existing Ashtarak-Gyumri Highway
Traces of Hellenistic period wall constructions in Benyamin archaeological complex on the left side of the existing Ashtarak-Gyumri Highway

View of Benyamin archaeological complex on the right side of the existing Ashtarak-Gyumri Highway
Complex solutions for minimizing the actual damage to the site during construction of the new Highway are required. First of all the change of “cloverleaf” location is required, which will cause the damage to the most well preserved part of the site. Next requirement is the redesign of the Highway further right, closer to the Benyamin village as much as it possible. In the case of redesigning the Highway and pushing it at least 80-100 m to the East, the new Highway will partly bypass (although not completely) the protection area of the site. At the same time, it does not exclude the absolute necessity of the test excavations of this new area.

The change of the “cloverleaf” position to the South (out of the protection area) along the existing Road, will cause minimal damage to the site and only the area occupied by this construction will be required for excavations. Otherwise long term and large-scale excavations along the right side of the existing Road will be required before the construction activities.
Benyamin archaeological complex, together with Agarak historical cultural preserve and Mastara archaeological complex, is the next serious archaeological “barrier” for the construction of the new Ashtarak-Gyumri Highway, which will require both, the change of Highway design and excavations, making strong influence on the coast and the duration of the Project.

**Selected publications related to the site:**


Ter-Martirosov F. et Stephan Deschamps, 2007, Un palais et ses dependances au cours de la période achemenide: Beniamin, Dans les montagnes d’Armenie, 500 000 ans d’histoire avant notre ere, Rouen, pp. 97-104;

Khachatryan H., 2007, L’habitat de Beniamin a l’époque hellenistique, Dans les montagnes d’Armenie, 500 000 ans d’histoire avant notre ere, Rouen, pp. 113-115;


41. **Azatan Megalithic structures (# 70 in GM and Map 22)**

Shirak marz, Azatan community

Distance in correspondence to the “0 point” of the road: 83.450 km

GPS coordinates: N 40°, 42’, 24, 3” ; E 43°, 50’, 21, 8”

State List of Historical-Archaeological Monuments: # 7.4.9.

The interesting and rare monuments of Azatan are represented by complex structures consisting of three separate lines of vertically erected rocks, spreading on about of 2 kilometers along the both sides of the existing Ashtarak-Gyumri Road. The character of these constructions is still unclear. Those types of Megalithic structures mainly have a ritual meaning, sometimes symbolizing “holy roads” between the major cultic constructions. Timing of the monuments is not clear as well: particularly, the constructions might belong to the Bronze - Iron Age periods.
The existing portion of the structures is situated on southern ending of the Azatan village, directly on the left side of the existing Road. Combination of the suggested design of the new Highway with the site shows that the planned change of the direction of the Highway from the left side to the right can directly affect the site and destroy it. The redesigning of the turn to the South can partly solve the questions related to the possible danger of the destruction of the site. Together with the mentioned, the test excavations of the right side of the existing Road are required. Also the full complex of mitigation measures (see the recommendations in our Reports # 1-2) will be required for protection of the site, making no serious influence on the coast and the duration of the Project.

References: None

Map 22. Protection area of Azatan Megalithic structures in relationship with the new design of the Ashtarak-Gyumri Highway.
Azatan Megalithic structures on the left side of the existing Ashtarak-Gyumri road.

B. Cultural (Memorial) objects of direct impact

The last group of recorded monuments that is being affected by the suggested Highway design consists of cultural sites (## 41, 47, 48, 59, 60, 63, 64, 65, 72, 73 in General Map). They are represented by 10 modern monuments of culture carrying religious or cultural significance. Those kinds of monuments are mostly memorials dedicated to the car accidents on the roads (see the sami in our Reports # 1 and 2) and in some cases they have decorative and worship meaning (like Numbers 60, 63). These monuments are not under state regulation and there are no special rules or laws that are ensuring their protection, but the monuments are deeply respected by the public, which means that they are under so-called “public protection”.

Because of their small sizes these monuments will be fully affected by road construction. They can be removed under the control and support of local communities in cooperation with the family members and relatives and re-erected in adjacent areas along the new Highway, after its construction will be finished.
The influence of these monuments on the suggested design and cost of the new Highway is minimal, and the construction organizations must take particular care of them, to avoid strong public criticism.

42. **Tiko, Tomo, Armen, Ara, Hrach Memorial** ( # 41 in GM).
Aragatsotn marz, Mastara community
Distance in correspondence to the “0 point” of the road: 48.920 km
GPS coordinates: N 40°, 26’, 27, 0” ; E 43°, 52’, 29, 1”

43. **Siraznik, Gagik Memorial** ( # 47 in GM).
Aragatsotn marz, Mastara community
Distance in correspondence to the “0 point” of the road: 54.200 km
GPS coordinates: N 40°, 28’, 04, 3” ; E 43°, 51’, 55, 6”

44. **Harutyunyan Suren Memorial** ( # 48 in GM).
Aragatsotn marz, Mastara community
Distance in correspondence to the “0 point” of the road: 54.700 km
GPS coordinates: N 40°, 28’, 19, 6” ; E 43°, 51’, 56, 8”

45. **Manasyan Artur Memorial** ( # 59 in GM).
Shirak marz, Maralik community
Distance in correspondence to the “0 point” of the road: 69.390 km
GPS coordinates: N 40°, 35’, 11”; E 43°, 52’, 27”

46. **Memorial Shrine** ( # 60 in GM).
Shirak marz, Maralik community
Distance in correspondence to the “0 point” of the road: 71.240 km
GPS coordinates: N 40°, 36’, 02”; E 43°, 51’, 51”

![Memorial Shrine, # 60 in GM.](image)

47. **“Black Khachkar”** ( # 63 in GM).
Shirak marz, Horom community
Distance in correspondence to the “0 point” of the road: 75.900 km
GPS coordinates: N 40°, 38’, 28”; E 43°, 51’, 08”

46. **Gevorg Memorial** ( # 64 in GM).
Shirak marz, Lusakert community
Distance in correspondence to the “0 point” of the road: 79.520 km
GPS coordinates: N 40°, 40’, 25”; E 43°, 50’, 59”
47. **Memorial to the Constructors – Victims of the 1988 Earthquake** (# 65 in GM).
Shirak marz, Lusakert community
Distance in correspondence to the “0 point” of the road: 79.990 km
GPS coordinates: N 40°, 40’, 39, 2’’; E 43°, 50’, 52, 5”

48. **Yurik Memorial** (# 72 in GM).
Shirak marz, Azatan community
Distance in correspondence to the “0 point” of the road: 84.720 km
GPS coordinates: N 40°, 43’, 04, 3’’; E 43°, 50’, 18, 4”

49. **Nazaryan Robert Memorial** (# 73 in GM).
Shirak marz, Azatan community
Distance in correspondence to the “0 point” of the road: 85.750 km
GPS coordinates: N 40°, 43’, 34, 5’’; E 43°, 50’, 01, 5”
C. Archaeological sites of indirect impact

50. **Mastara -3 Settlement** (Map # 25)
Aragatsotn marz, Mastara community
Distance in correspondence to the “0 point” of the road: 48.500 – 49.000 km
GPS coordinates: N 40°, 24', 11, 02” ; E 43°, 52’, 57, 17”
Site is newly discovered.

The site is located nearby the southern outskirts of the village of Mastara. According the surface materials the Mastara-3 settlement belongs to the Bronze-Iron Age period and is representing rich archaeological deposits and the remnants of the dwelling constructions.

Map 25. Boundaries of the Mastara -3 Bronze Age settlement (yellow dotted).
Though this site is not directly affected by the constructional activities of the new Highway, the next mitigation measurements are required as well: the construction process has to be done carefully near the settlement, in order not to destroy it or to cover the structures by construction waste. As the activities should run near the protection area of the site, it is forbidden to use its area for parking the heavy mechanisms, for storing constructional materials or using local soil for constructional purposes. The construction activities may not close the access to the site.

Conclusions

Summarizing the study of the physical cultural resources along the new design of the Ashtarak-Gyumri Mian Highway we can say that the most problematic targeting points are the 20 archaeological monuments, which are affected by the suggested preliminary design. For at least 8 of those monuments, change of the suggested design is required. Among those are: Agarak historical-cultural preserve, Aruch medieval Caravanserai, Zakari Berd castle, Mastara archaeological complex, Tomb field and medieval village remains of Hayrenyats, Beniamin archaeological complex, Azatan Megalithic structures.

Suggested solutions will be able to change the category of 5 monuments from directly affected to the category of not affected. Those are: Aruch Neolithic settlement and medieval village remains, Aruch medieval Caravanserai, Zakari Berd castle, Tomb field and medieval village remains of Hayrenyats, Azatan Megalithic structures.

Even in that case the rest 3 monuments: Agarak historical-cultural-preserve, Mastara archaeological complex, and Beniamin archaeological complex, which were separated by the existing road and the parts of them are on both sides of the road. So, it is impossible to find solutions for saving them from full destruction. These sites must be excavated, and in thereby their cultural-historical value can be preserved.

For the rest of the sites any changes of suggested design are not required. At least for 8 of them (Medieval village remains in
Shamiram, Nerkin Bazmaberd tomb field, Verin Sasunashen archaeological complex, Davtashen archaeological complex, Talin tomb field, Yeghnasar tomb field, Mastara-2 tomb field, Fortified settlement and tomb field of Dzorakap) archaeological test-excavations are required, because part of their structures are directly affected by the newly built highway. And at least in 4 of those sites (Nerin Naver archaeological complex, Kosh Settlement, Lanjik archaeological complex, Settlement and tomb field in Lanjik) chance-find regulations issued by the Ministry of Culture are strictly observed, because discoveries of archaeological finds during soil removal process are possible. In summary in at least 11 archaeological monuments located along the Ashtarak-Gyumri Highway archaeological excavations are required. Those procedures will affect not only the cost of the new road construction, but will influence on the time table and duration of the whole project. We can consider that the physical-cultural resources are the main difficulty in the whole picture of road construction activities and it is strongly recommended that PMU must open a position for an archaeologist who has to deal with this large amount of protection procedures and control over the activities of the contracting organizations and regulate the relations between the teams of archaeologists and construction bodies. The task of the mentioned expert must include the chance-find regulations all along the construction areas of the new Ashtarak-Gyumri Highway.

At the end it is important to underline that the rest of the physical cultural resources - historical-archaeological and cultural monuments recorded along the Ahstarak-Gyumri Highway, which are not directly affected by the constructional activities of the new highway, mitigation measurements are required as well. Those must include the same procedures: the construction process has to be done carefully near the monuments in order not to destroy them or to close the structures by construction waste. As the activities should run near the protection areas of the sites, it is forbidden to use those areas for parking the heavy mechanisms, for storing constructional materials or using local soil for constructional purposes. The construction activities may not close the access to the sites.

Dr. Mkrtich. H. Zardaryan
14. 03. 2011
ANNEX 3b  Archaeological Assessment Report – Part 2

The North-South Road Corridor Investment Programme
Tranche 3 –A

Archaeological Impact Assessment Report Part 2

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List of the archaeological sites of direct impact (settlements and tomb-fields) recorded along the Talin - Gyumri segment of Ahstarak-Gyumri Highway

The zones of the archaeological sites

and the costs and timing of their investigations
1 (32) Talin tomb field (# 38 in GM and Map 10). From the area of the Interchange on the second recent crossing leading to Talin (Tranche 2) up to the end of Talin tomb field (Tranche 3).

Aragatsotn marz, Talin community.

GPS coordinates: N 40°, 24', 03, 0'' ; E 43°, 53', 30, 7''.

State List of Historical-Archaeological Monuments: # 2.3.3.

Length: 71+100 (old data). New: 69+900 - 71+100 – 75+730.5

Adjacent area under construction: 96.5 hectares.

Costs of investigation: $ 65,000 USD.

Time of investigation: 5 months.

2 (33) Yeghnasar tomb field (# 39 in GM and Map 12).

Aragatsotn marz, Talin-Akounk-Mastara communities.

GPS coordinates: N 40°, 25', 02, 0'' ; E 43°, 51', 26, 8''.

Site is discovered newly.


Adjacent area under construction: 15 hectares.

Costs of investigation: $ 40,000 USD.

Time of investigation: 4 months.

3 (34) Mastara archaeological complex (# 42 in GM, Map 13 and 14).

Aragatsotn marz, Mastara community

GPS coordinates: N 40°, 26', 53, 8'' ; E 43°, 51', 53, 8''.

Site is newly discovered.

Length: 50.000 – 51.900 km (old data). New: 79+900 – 82+000.

Adjacent area under construction: 32.2 hectares.

Costs of investigation: $ 35,000 USD.

Time of investigation: 4 months.

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5 According the revised “picketage”. The “Zero” point mentioned in our Reports #1, 2 and 3 (Tranches 2, 3) = 30+080, according the General Map (preliminary) of the Constructors.

6 The area for the archaeological investigations had been calculated in correlation with “the zone of engineering activities” – 70 m to the right and left from the axis of existing road. The areas of new interchanges had been calculated according their territories.

7 The division of the sites #1 (32) and 2 (33) is conditional. Here we are dealing with the same Tomb field marked by the adjacent remarkable toponymes.
4 (35) Mastara-2 tomb field (# 45 in GM and Map 15).
Aragatsotn marz, Mastara community.
GPS coordinates: N 40°, 27', 40, 3" ; E 43°, 51', 34, 6".
Site is discovered newly.
Adjacent area under construction: 33.7 hectares.
Costs of investigation: $ 35,000 USD.
Time of investigation: 4 months.

5 (36) Lanjik archaeological complex (# 52 in GM and Map 16).
Aragatsotn and Shirak marzes, territory of Mastara – Lanjik - Sarnaghbyur Communities.
GPS coordinates: N 40°, 29’, 38, 3” ; E 43°, 52’, 05, 4”
State List of Historical-Archaeological Monuments: # 7.44.1-3
Adjacent area under construction: 91.3 hectares.
Costs of investigation: $ 45,000 USD.
Time of investigation: 5 months.

6 (37) Settlement and tomb field in Lanjik (# 56 in GM and Map 17).
Shirak marz, Lanjik - Sarnaghbyur communities.
GPS coordinates: N 40°, 31’, 57, 8” ; E 43°, 52’, 34, 6”.
Site is discovered newly.
Adjacent area under construction: 16.4 hectares.
Costs of investigation: $ 30,000 USD.
Time of investigation: 4 months.

7 (38) Fortified settlement and tomb field of Dzorakap (# 58 in GM and Map 18).
Shirak marz, Dzorakap community.
GPS coordinates: N 40°, 34’, 01, 6” ; E 43°, 53’, 09, 5”.

8 The division of the sites # 3 (34) and 4 (35) and 5 (36) is also conditional. Here we have the Settlement and its large Tomb field marked by the adjacent remarkable toponymes.
State List of Historical-Archaeological Monuments:  # 7.73.7
Adjacent area under construction: 34.8 hectares.
Costs of investigation: $ 35.000 USD
Time of investigation: 5 months.

8 (39) Tomb field and Medieval village remnants of Hayrenyats(#62 in GM and Map 19).
Shirak marz, territory of Hayrenyats and Horom communities.
GPS coordinates: N 40°, 38’, 16, 8” ; E 43°, 51’, 06, 6”.
Site is newly discovered.
Length: 75.000 – 75.900 km (old data). New: 102+300 – 104+500.
Adjacent area under construction: 30.8 hectares.
Costs of investigation: $ 20.000 USD
Time of investigation: 2 months.

9 (40) Benyamin archaeological complex (# 67 in GM, Map 20 and 21).
Shirak marz, Benyamin community.
GPS coordinates: N 40°, 41’, 22, 3” ; E 43°, 50’, 24, 2”
State List of Historical-Archaeological Monuments:  # 7.27.9.
Adjacent area under construction (right side of the road): 33 hectares.
Costs of investigation: $ 220.000 USD
Time of investigation: 8 months.
The main territory of the site of Benyamin is located on the left side of existing road and its area here is larger than the frames mentioned above. So, this territory must be left out of any constructive activity.

10 (41) Azatan Megalithic structures (# 70 in GM and Map 22).
Shirak marz, Azatan community.
Distance in correspondence to the “0 point” of the road:  83.450 km (old data).
New: 112+000 – 112+400.
GPS coordinates: N 40°, 42’, 24, 3” ; E 43°, 50’, 21, 8”
State List of Historical-Archaeological Monuments:  # 7.4.9.
The Megalitic structures are located on the left edge of existing road. The site is included in the State List of Historical-Archaeological Monuments (see above). It is under the State protection and must be protected irrespective of
its scientific investigation. In order of that, the new road line needs to be moved to the right side of existing road, leaving the left side inviolable. Together with the Megalits, there is a Tomb field in this area (the megalithic structure is a part of that). Before the beginning of construction activities, the territory to the right of existing road needs the archaeological examination. Length: 112+000 – 115+000.
Adjacent area under construction (right side of the road): 42.1 hectares.
Costs of investigation: $ 15.000 USD
Time of investigation: 3 months.

To be added to the Report

It has to be stressed that the mentioned costs of investigations and their time limits are of preliminary character, since it is not realistic to concretize such details basing only on the field survey data. So, the timing of archaeological research of the sites and the expenses of investigations could be different from the abovementioned.

By the same reasons, during the constructive activities the new archaeological units (not mentioned in the State List of Historical-Archaeological Monuments or the present list of the sites) could be unearthed. Because of that, the close contacts between the archaeologists and constructors as well as the presence of an archaeologist in each major unit of constructors during the process of road construction are essential.

The investigations of the archaeological sites registered along the Tranche 3 line (as well as in frames of Tranche 2) will take not less than 8 months. In this framework it is necessary to take into account the severe seasonal-climatic characteristics of the Talin and Shirak regions (late spring, early winter) that will put its impact on the field work process.

Since the work will start simultaneously on the number of sites, it will not withhold the process of road construction.

M. H. Zardaryan
11. 08. 2011
Institute of Archaeology and Ethnography
National Academy of Sciences, RA
Archaeological Consultant of the Programme
Annex 4 1st Public Consultation (advertisements, attendance lists and sheets, handout)

1st Public Consultation – 26 & 27 May 2010 (Yerevan, Kosh)
Armenia: North-South Road Corridor Investment Program Tranches 2 & 3 – Environmental Impact Assessment Report

Newspaper Advertisement: Aragats World (24 May 2010)
List of attendees

Yerevan, 26 May, 2010

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Kosh, 27 May, 2010

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1st Public Consultation – 26 & 27 May 2010 (Yerevan, Kosh,)
Armenia: North-South Road Corridor Investment Program Tranches 2 & 3 –
Environmental Impact Assessment Report

Public Consultation
26 May 2010 in Yerevan ■ 27 May 2010 in Kosh, Maralik, and Gyumri

Environmental Impact Assessment
Ecology & Archaeology

Location: Aragatsotn and Shirak marzooz (Ashtarak to Gyumri)

Need for the project and key benefits
The Government of Armenia is implementing the North-South Road Corridor Program in order to improve the transportation links with its neighbors Iran and Georgia to international standards.
The Asian Development Bank (ADB) is assisting the Ministry of Transportation and Communication (MOTC) with a financing facility to undertake Tranche 2; the upgrading of the highway from the outskirts of Ashtarak to Gyumri.

Environmental assessment
An environmental assessment is currently underway to identify potential impacts of the project on the ecology and archaeological sites along the 88 km route. The assessment report will include an environmental management plan with mitigation measures to ensure that government of Armenia and ADB environment and social safeguard requirements are met.

Key design features
The project will improve the highway from Ashtarak to Gyumri from a 2-lane road to a 4-lane divided highway. All communities near the highway will have access via 2-directional interchanges.

Construction management
Construction impacts will be considered including temporary traffic management (access restrictions, heavy vehicles on local roads), dust, noise, air pollution, waste and spoil management, and social impacts.
Where the road crosses approximately 15 watercourses in gorges and is near some 21 archaeological sites, special care will be taken to minimize adverse impacts by carefully adhering to mitigation measures that are detailed in the environmental management and monitoring plan (EMP).

Environment - Key topics and issues assessed
- Preservation of archaeological sites and historical and cultural monuments
- Removal of vegetation and land degradation
- Impact on watercourses, wetlands, and reservoirs
- Air pollution
- Noise and vibration
- Tree removal and replacement (10:1 considered)
- Site restoration and solid waste management
- Health and safety of construction workers and nearby residents

Ministry of Transport & Communication
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Asian Development Bank
2nd Public Consultation – 1 and 2 June, 2010 (Yerevan, Kosh)
Armenia: North-South Road Corridor Investment Program Tranches 3 – Environmental Impact Assessment Report
### 2nd public consultation- 1, 2 June 2010 (Yerevan, Kosh)

List of Attendees – Kosh, 1 July 2010

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![Table Image]

1. The table in the image contains the list of attendees for the 2nd public consultation held on 1st and 2nd June 2010 in Yerevan, Kosh.
2. Each attendee is listed with their name, organization, telephone number, and email address.
3. Signatures are present for some attendees, indicating their confirmation of attendance.

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**Annexes**

**Armenia – NSRC Investment Program Tranche 3: Talin – Gyumri Road EIA**

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## Yerevan, July 2010

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<td>Consumers Association</td>
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**Armenia – NSRC Investment Program Tranche 3: Talin – Gyumri Road EIA**

Annexes
Location: Aragatsotn and Shirak marzes (Ashtarak to Gyumri)

Need for the project and key benefits

The Government of Armenia is implementing the North-South Road Corridor Program in order to upgrade the transportation links with its neighbors Iran and Georgia to international standards.

The Asian Development Bank (ADB) is assisting the Ministry of Transportation and Communication (MOTC) with a financing facility to undertake Tranche 2: the upgrading of the highway from the outskirts of Ashtarak to Gyumri.

Environmental assessment

An environmental assessment was undertaken to identify potential impacts of the project on the ecology and archaeological sites along the 88 km route. The environmental impact assessment (EIA) report will be completed by end July 2010 and then posted on the websites of the MOTC, ADB, and ADB Armenian Resident Mission. The report will include an environmental management and monitoring plan (EMP) with mitigation measures to ensure that Government of Armenia and ADB environment safeguard requirements are met.

Key design features

The project will upgrade the highway from Ashtarak to Gyumri from a 2-lane road to a 4-lane divided highway. All communities near the highway will have access via 2-directional interchanges. Underpasses will be provided for cattle, farm and personal vehicles, and wildlife.

Construction management

Construction impacts will be mitigated including temporary traffic management (access restrictions, heavy vehicles on local roads), dust, noise, air pollution, waste and spoil management, and social impacts.

Where the road crosses 15 gorges, 7 of which contain streams, and is near some 24 archaeological sites, special mitigation measures will be detailed in the environmental management and monitoring plan.

Environment – Key topics and issues

Preservation of archaeological sites and historical and cultural monuments
Removal of vegetation and land degradation & site restoration and solid waste management
Impact on watercourses, wetlands, and reservoirs (baseline measurements in 7 watercourses)
Identification of Red Book species and mitigation measures to preserve them
Air pollution, noise and vibration effects on nearby residents (baseline measurements in 12 communities)
Tree removal from public lands and replacement
Health and safety of construction workers and nearby residents

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